YACHTING

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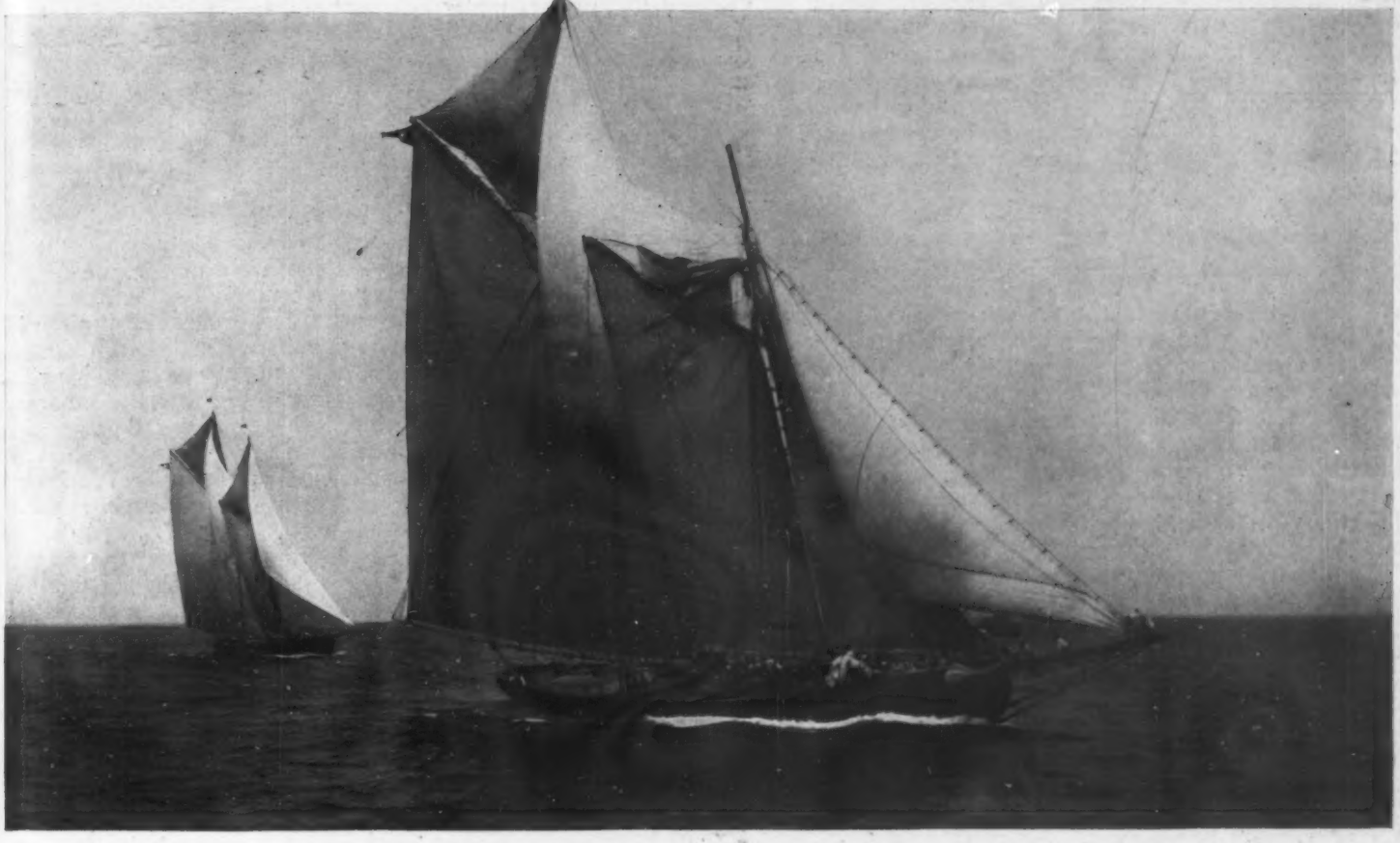


THE "GANG" TAKING IN BALLOONER AFTER FORE TOPMAST HAS CARRIED AWAY

The Sail Carriers

Though the Age of American Clipper Ships and Their Record Passages has Passed, the Spirit of the Hard-Driving Officers of That Day now Finds Expression in the New England Fishing Fleet that Sails the Banks from Hatteras to the Virgin

By FREDERICK WILLIAM WALLACE

SINCE the halcyon days of the deep-water "windjammers" and in the present age of steam propulsion one does not hear much of records being broken under sail. The sharp built, heavily-sparred clippers which raced tea from China, and the Western Ocean emigrant and cargo packet ships which endeavored to hold their own against the encroachments of the steamship, are now half forgotten memories; while the daring, cool-headed men who sailed them have passed away and, to-day, are almost as extinct as the dodo.

They were great sailors, those old clipper ship masters, and in their fight for sail against steam they brought the art of sailing to a very high plane. They were the real "sail carriers"—the men who went on the old deep-water proverb that "what she won't carry she'll drag"; and with them it was almost a point of honor never to reduce their canvas until the last minute. The crews were like the skippers, and had to be sailors in every sense of the term—able to hand, reef and steer. Life at sea was held cheap; skippers "cracked on" and flew their "kites" up to the lip of the squall and the edge of the hurricane; and when the bellying canvas and straining spars could no longer stand the pressure the crews were sent aloft to furl under conditions well calculated to blow them off the yards.

With the idea of driving the vessel as much as possible all kinds of extra sail was crowded on in light breezes, and a clipper under a full press was a veritable cloud of canvas. The square-rigger of latter days has her sail plan cut as low and wide as possible for economy in handling—usually nothing above the royals, and, in some cases, no sail above topgallantsails. Not so the old-timer. She carried skysails and sometimes "moonsails" above the royals on all three masts. Studdingsails were rigged out at the skirts of all the others, and were one of these craft to appear to-day with all the old-time "pocket handkerchiefs" aboard it is doubtful if she could get a crew that would come to handle them. Sending out stuns'l booms and crawling out on these precarious spars to reeve tacks and other "gadgets" does not appeal to the sailorman of to-day, and were he asked to sign on for a voyage in a craft of this sort he would murmur something about handling "sailor teasers" and decline.

The old-time sail carriers took a great pride in their vessels—the Americans and Canadians especially—and the skippers vied with each other in gaining reputations for driving and making a record day's run. This sort of thing required a great deal of care, nerve and unceasing vigilance on their part, as well as an immense amount of hardihood and skill on the part of the crew; but the young seaman who made a voyage with a captain of this type gained a training in the ways of sail handling which he was never likely to forget.

The late Captain Samuels, of the Atlantic Packet ship Dread-

naught, was probably the most celebrated of the sail carrying skippers, and his vessel was renowned among sailormen as the "Wild Boat of the Atlantic." Built for driving in heavy weather in order to compete in point of speed with the rising tide of the steamship, this vessel was often seen under a full press of sail in a gale of wind when other vessels were snugged down or hove-to. Samuels never let up on his craft from the time she dropped the tow-boat until she picked up the pilot off her destination, and one of his fastest passages was 13 days 11 hours, New York to Liverpool, dock to dock. She is also credited with a passage of 9 days 17 hours from Queenstown to Sandy Hook; and although it is quite possible she did so, the record has never been actually proved.

Though the romantic days of sail have passed into Lethe, as far as the white-winged clippers are concerned, the old-time "drivers" and "sail carriers" have a good successor in the fishermen of the Atlantic coast. With the fishermen it is a matter of pride. They love a fast-sailing schooner, while the men themselves are as reckless in carrying sail in stiff breezes as the square-rigger skippers of former days.

The type of fishing schooner employed in the Bank fisheries is a fast sailing model. Deep, well-ballasted, clean-lined, and carrying an enormous spread of canvas, they are ideal craft for driving. The fishermen know it and, when homeward-bound for market, they slam them for port as hard as they can go.

The writer has watched these craft many a time swinging up Boston Bay from Georges for T Wharf, and in half a gale of wind tearing along under four lowers, balloon, stays'l and topsails, lee rail clean out of sight and half the deck awash. It was an entrancing sight to see those able vessels flying along on the wings of the wind with a score of hardy, oilskin-clad fellows lounging around the quarter and keeping an anxious eye on the vessel to wind'ard or loo'ard.

Next to big "fares," sail-carrying yarns are the favorite topics in a fisherman's cabin or foc's'le. Stories of being hove-down until the lee crosstrees dipped the water; of blowing away sail, and running vessels under are related with great gusto. Fishermen will tell you about the mythical skipper who, when told that a boarding sea had driven the two nests of dories over the stern, turned in his bunk with the injunction to call him when the windlass showed signs of coming aft. Also, of the sail carrier who turned in after telling the man at the wheel to rouse him if the gale moderated.

Captain "Tommy" Bohlen's exploits in the schooner Nannie Bohlen is also a favorite yarn. How he drove his vessel across the Atlantic after mackerel, and when homeward-bound, under four lowers and decks awash, the officer on the bridge of a passing tramp steamer asked him if he was crazy to be carrying so much sail in such a breeze.

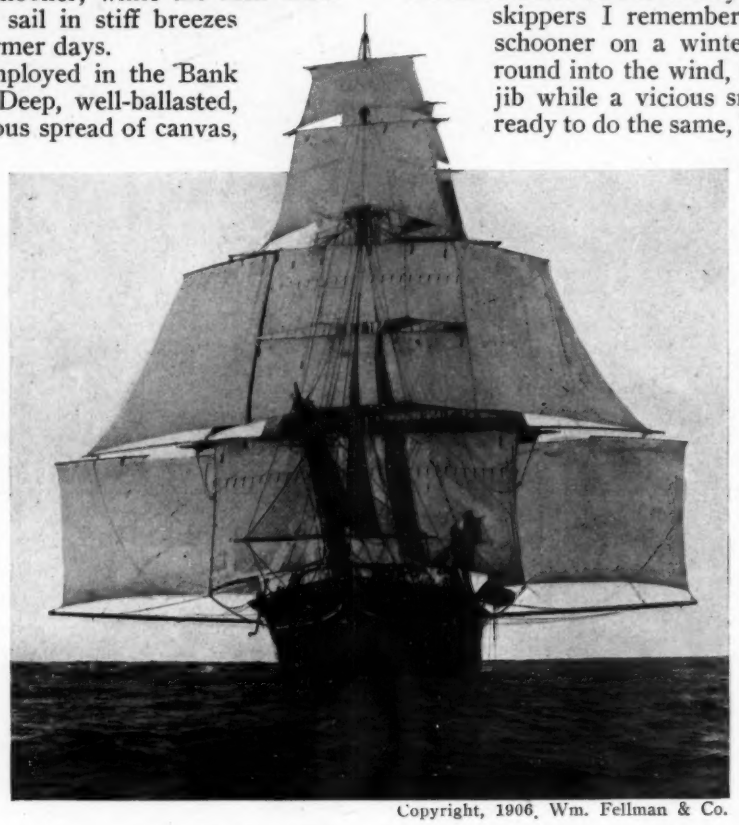
"Carrying sail?" the redoubtable skipper is supposed to have said. "Say, fellers, h'ist stays'l an' balloon. We'll show that blame' steamboat sailor how to carry sail!" And he did—blowing the two kites out of the bolt ropes as soon as they were sheeted down.

I have sailed on these vessels with skippers who made it almost a point of honor when on a passage never to reef a mains'l if they could help it. Sail was carried through the whirling tide rips off Cape Sable and the Bay of Fundy until it was no longer safe for a man to remain on deck and the helmsman was lashed to the wheel. On another occasion during a stiff breeze of wind and a blinding snowstorm we ran from Brown's Bank, making 35 knots in three hours under three lowers, and only commenced reefing the mainsail when she started to tremble under the strain. An hour later we were running under a reefed foresail.

"Swing her for home as hard as she will go!" is the fisherman's motto, and the majority of them live up to it. Through black nights and winter gales they will make passages with solid water on deck and all hands below playing cards or hanging onto their bunks, absolutely careless of the weather.

"If th' skipper can stand th' racket, we can!" they will say; but there have been occasions when a reckless skipper has scared the gang into sending deputations aft with a request to reduce sail. The latter instance is not a common one; and, depend upon it, before such a thing happens, it has to be "blowing some."

As an instance of the rivalry which exists between some fishing skippers I remember when, in company with another schooner on a winter trip, we saw the other skipper round into the wind, lower his mainsail and trice up his jib while a vicious snow squall bore down. We were ready to do the same, but our skipper held on for an hour longer until he had run the other fellow out of sight to loo'ard before he passed the word to reduce sail. When we did commence, it was to heave her to under foresail and jumbo.



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ON THE OLD TIMERS STUNSAILS WERE RIGGED OUT AT THE SKIRTS OF THE OTHER SAILS

Though the vessels are small in comparison with the lordly square-rigger, yet I contend there is as much, if not more, risk and nerve required to reduce sail in a fishing schooner as in the larger vessel. Tussling with topsails or topgallantsails on a square-rigger's yards in a breeze is, no doubt, sometimes a tough job but I do not consider it as bad as hauling out a reef earring on the boom footropes of a fisherman. In the former case a man has only the wind and fractious canvas to contend with; but on the precarious end of a schooner's main boom there is the danger of being washed off by a sea, and many a poor fellow has lost the number of his mess while carrying out this operation.

Then, again, in handling jibs the square-rigger seaman has a fine lofty spar to work upon in a sky-soaring bowsprit and jib boom; but in the fisherman the bowsprit is so close to the water that, in a head sea, and even when running off, she'll often drive her bowsprit under. The sensation of being "doused" is by no means a pleasant one, and when she rises a man has to grit his teeth and hang on like a leech, even though his arms begin to crack with the strain. If he lets go, or loosens his grip for an instant, it's all day with him, and his body will, in all probability be stove down as he drops under the bow.

To the lover of the sea there is an exhilaration in sailing aboard these vessels, and even the fishermen themselves welcome a breeze of wind and a little sail handling after the eternal monotony of days "baiting up," rigging gear and "combing" trawls. When the last fish has been packed in the hold pens, the trawl tubs, pen boards and dressing tables are stowed away with marvelous rapidity. All hands watch the skipper, and when that autocrat sings out, "Draw away!" the jumbo tail rope is loose before the words are out of his mouth. The man at the wheel repeats the homeward-bound course, and seems to feel a certain joy in the injunc-

AN ATLANTIC BUSTER

LOGGING 16 KNOTS ON A RUN FROM PORTLAND TO YARMOUTH, N. S.

tion "and a good full!" Up go the light sails and, with the big stays'l and balloon drawing, the men linger around on deck and watch the able vessel storming along.

"The girls have got hold of our tow-rope!" Rearing and plunging over the bottle-green combers, with a welter of white water roaring aft from her sharp bows, the schooner swings for home, while whole seas sluice over the head and down through the scuttle into the foc's'le. Aloft, the breeze sings in the tautened shrouds and halyards and mutters in low thunder under the foot of the sails. Swish! Crash! Bang! Through daylight and dark her forefoot is snoring away from the shoal water of the Bank, and the crowd in their bunks listen to the "underway noises" with keen appreciation. What if she slams the cook's pots off the stove and sends his crockery helter-skelter around the foc's'le? "She's homeward-bound, bullies, and the girls at Eastern Point are giving her a strong pull."

The skipper turns the gang out at all hours of the night, and though the men curse at being waked to "jig up" or hoist another kite, they swarm to the streaming deck with alacrity, and there is a genuine heartiness in their shouts of "Sway her up, bullies!" "More beef on th' main sheet!" "Heave an' break th' rope!"

Maybe it's a call to stow the balloon. It is as dark as the inside of a jack boot, blowing fresh and a little bit of sea; but out on the bowsprit foot-ropes we go — a laughing, cursing mob.

"Let go th' halyards! Man your down-haul! Ease off lee sheet!" and down comes the big sail, bellying and flapping like a living thing reluctant to be stowed. Some nimble fellow springs up the foretopmast stay and stamps the jamming hanks down with his heavy boots, while somebody curses him for stamping on his hands at the same time. "All ready, boys? Roll her up!" And while the vessel is ramming her bow into the surge we beat the sail into quietude and pass the stops.

"225 MILES LOGGED IN 18 HOURS"

Is the skipper running her off? Not a bit of it. She gives one lurch before we get off the bowsprit and six or seven oilskin-clad figures disappear in a cloud of spray.

"Damn her!" yells a voice. "She's filled my goddam' boots. What in blazes is th' matter with th' skipper? Does he want to wash us off th' blasted stick?"

"Get aboard, fellers!" bawls a voice. "Look what's coming!" And, scrambling off the footropes in desperate haste to avoid another ducking, we tumble inboard in time to catch another comber which breaks over the bow and washes an indignant mob of oil-skinned humanity under the windlass gear. The skipper, pulling away at the butt of a cigar, smiles as we come aft.

"Bit wet out there, boys?" he says.

"You bet your dam' life it was wet," growls the man whose sea-boots were too wide. She filled my boots when she dipped, an' slammed a whole sea down my back when I come aboard—th' dirty peddler!"

And so it goes on, as, storming for port with a bone in her teeth, the able vessel raises the harbor light and slides into the wharf—a prosaic, sea-worn, untidy schooner, with but little in her appearance to hint of the romantic atmosphere she carries on open water.

THE GANG STANDING BY FOR A SQUALL

"FISTING" THE JIB

Henry Hudson's Last Voyage

An Account of the Fourth Voyage of the Great Navigator, and of the Mutiny that Cost Him His Life, as Told by One of the Survivors

FOREWORD

In two previous issues of YACHTING appeared an account of Henry Hudson's third voyage to America, the one on which he explored this coast from Cape Sable, Nova Scotia, to Hatteras, and the one on which he discovered the Hudson River. That story was taken from the journal of his mate, Robert Juet. On his return home from this voyage, in the fall of 1609, Hudson left the employ of the Dutch Muscovey Co. and the following year, his fame as a navigator and explorer having spread, he was again sent out on a search for a northwest passage to India—a visionary quest that has cost the lives of many brave explorers, and which up to the middle of the Nineteenth Century was still the potent factor in Arctic exploration. This time he did not go in the employ of the Dutch Company, but was sent out from England by three members of that company—Smith, Wolstenholme and Diggs—who supplied him with a little bark called the *Discovery*, but little larger than the *Half Moon*, in which he made the voyage the year before.

After his search of the previous year had convinced him that there was no passage south of the St. Lawrence River, Hudson's thoughts naturally turned northward to that wide arm of the sea south of Greenland which Cabot, Davis and Frobisher had all reported, some of them saying that it was as large as the Mediterranean, and he decided to steer for the south end of Greenland on this voyage. He had a crew of twenty men with him, several of whom had been with him on his former voyage, among them being his old mate Juet, who on this voyage was destined to prove untrue to his master, and to whose presence the mutiny that cost Hudson his life is partly attributed. The rest of the crew were made up largely of the usual assortment of rogues and malcontents with which the early explorers were sometimes forced to fill their ships on a voyage that regular seamen feared. The vessel was provisioned for only a year.

The account of this voyage which follows is made up, first, of Hudson's journal, which is quoted up to the time of his entrance into the great bay which now bears his name; while the rest of it is told by one Prickett, a man who was sent along by Diggs, one of those that supplied the bark, and who wrote the account of the mutiny on his return to London as a defense before the English courts for his part in the affair and an excuse for his own conduct. This probably tells better than any other record the exact facts leading up to the mutiny and the subsequent doings of the crew.

An Abstract of the Iournall of Master HENRY HUDSON, for the Discoverie of the North-west Passage, begunne the seventeenth of Aprill, 1610, ended with his end, being treacherously exposed by some of the Companie.

THE seventeenth of Aprill, 1610, we brake ground, and went downe from Saint Katharine's Poole, and fell downe to Blacke-wall: and so plyed downe with the ships to Lee, which was the two-and-twentieth day.

The two-and-twentieth, I caused Master Coleburne to bee put into a Pinke, bound for London, with my Letter to the Adventurers, importing the reason wherefore I so put him out of the ship, and so plyed forth.

It will be seen from this that trouble was already brewing, inasmuch as Hudson had to put his master ashore before the ship was out of the Thames.

The second of May, the wind Southerly, at Eeven we were thwart of Flamborough Head. The fift we were at the Iles of Orkney, and here I set the North end of the Needle and the North of the Flie all one. The sixt, wee were in the latitude of 59 degrees 22 minutes, and there perceived that the North end of Scotland, Orkney, and Shortland are not so Northerly, as is commonly set downe. The eight day, wee saw Farre Ilands (Faroe Islands, north of Scotland) in the latitude of 62 degrees 24 minutes. The eleventh day, we fell with the Easter part of Island, and then plying along the Souther part of the Land, we came to Westmony, being the fifteenth day, and still plyed about the mayne Iland, untill the last of May with contrary winds, and we got some Fowles of divers sorts.

The first day of Iune, we put to Sea out of an Harbour, in the Westermost part of Island, and so plyed to the Westward in the latitude of 66 degrees 34 minutes, and the second day plyed and found our selves in 65 degrees 57 minutes, with little wind Easterly.

The third day wee found our selves in 65 degrees 30 minutes, with winde at North-east, a little before this we sayled neere some Ice. The fourth day, we saw Groneland (Greenland) over the Ice perfectly, and this night the Sunne went downe due North, and rose North North-east. So plying the fift day, we were in 65 degrees, still encombred with much Ice, which hung upon the Coast of Groneland. The ninth day, wee were off Frobishers Streights with the winde Northerly, and plyed unto the South-westwards untill the fifteenth day.

The fifteenth day, we were in sight of the land, in latitude 59 degrees 27 minutes (his observation must have been out, as this island is in Lat. 61 N.), which was called by Captayne Iohn Davis, Desolation, and found the errour of the fomer laying downe of that Land: and then running to the North-westward untill the twentieth day, wee found the ship in 60 degrees 42 minutes, and saw much Ice, and many Riplings or Over-fals, and a strong streame setting from East South-east, to West North-west. (Evidently the entrance to Hudson's Strait.)

The one and twentie, two and twentie, and three and twentie dayes, with the winde variable, we plyed to the North-westward in sight of much Ice, into the height of 62 degrees 29 minutes. The foure and twentie, and five and twentie dayes, sayling to the West-ward about mid-night, wee saw Land North, which was suddenly lost againe. So wee ranne still to the West-ward in 62 degrees 17 minutes.

The fift of Iuly, wee plyed up upon the Souther side, troubled with much Ice in seeking the shoare untill the sixt day of Iuly, and we observed that day in 59 degrees 16 minutes. Then we plyed off the shoare againe, until the eight day, and then found the height of the Pole in 60 degrees no minutes. Here we saw the Land from the North-west, by West, halfe Northerly, unto the South-west by West, covered with snow, a Champaigne Land, and called it, Desire Provoketh. (Hudson evidently had a sense of humor, if we can judge from this joke, the land still bearing this name.)

We still plyed up to the Westward, as the Land and Ice would suffer untill the eleventh day; when fearing a storme, we anchored by three Rockie Ilands in uncertayne depth, betweene two and nine fathomes; and found it an Harbour unsufficient by reason of sunken Rockes, one of which was next morning two fathomes above water. Wee called them the Isles of Gods Mercies. (On the northerly side of the Straits.) The water floweth here better than foure fathomes. (A rise and fall of tide of over 24 feet.) The Floud commeth from the North, flowing eight the change day. The latitude in this place is 62 degrees 9 minutes. Then plying to the South-westward the sixteenth day, wee were in the latitude of 58 degrees 50 minutes, but found our selves imbayed with Land, and had much Ice; and we plyed to the North-westward untill the nineteenth day, and then wee found by observation the height of the Pole in 61 degrees 24 minutes, and saw the Land, which I named, Hold with Hope. Hence I plyed to the North-westward still untill the one and twentieth day, with the wind variable. Heere I found the Sea more growne (?) then any wee had since wee left England.

The three and twentieth day, by observation the height of the

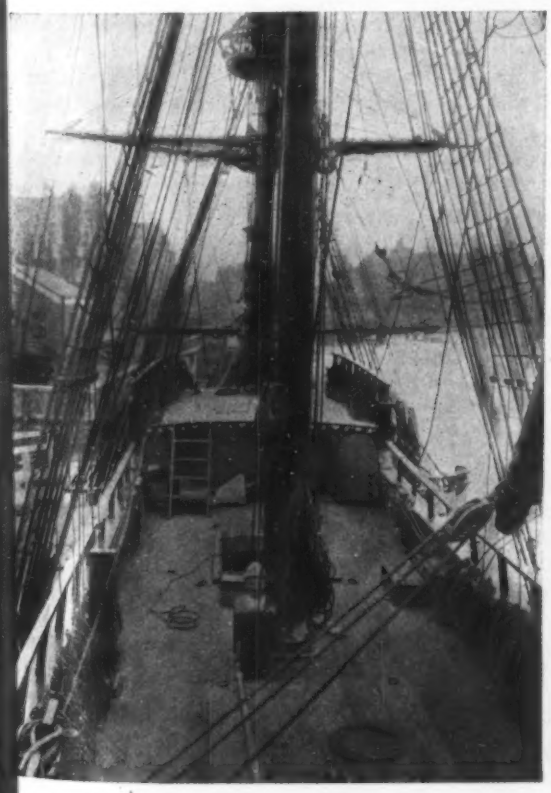
Pole was 61 degrees 33 minutes. The five and twentieth day, we saw the Land; and named it Magna Britannia. The one and thirtieth day, plying to the Westward, at noone wee found our selves in 62 degrees 24 minutes.

The first of August, we had sight of the Northerne shoare, from the North by East to the West by South off us: the North part twelve leagues, and the Wester part twentie leagues from us: and we had no ground there at one hundred and eightie fathomes. And I thinke I saw Land on the Sunne side, but could not make it perfectly, bearing East North-east. Here I found the latitude 62 degrees 50 minutes.

The second day, we had sight of a faire Headland, on the Norther shoare six leagues off, which I called Salisburies Foreland (Salisbury Island, near the entrance of Hudson Bay): we ranne from them West South-west, fourteene leagues: In the midway of which wee were suddenly come into a great and whurling Sea, whether caused by meeting of two streames, or an Overfall I know not. Thence sayling West and by South seven leagues farther, we were in the mouth of a Streight and sounded, and had no ground at one hundred fathomes: the Streight being there not above two leagues broad, in the passage in this Wester part: which from the Easter part of Fretum Davis is distant 250 leagues there abouts. (Evidently a passage between the main land and one of the numerous islands at the entrance to the great bay.)

The third day, we put through the narrow passage, after our men had beene on Land, which had well observed there, That the Floud did come from the North, flowing by the shoare five fathomes. The head of this entrance on the South side, I named Cape Worsenholme (Wolstenholme); and the head on the Northwester shoare, I called Cape Digs. (This was Diggs Island.) After wee had sailed with an Easterly winde, West and by South ten leagues, the land fell away to the Southward, and the other Iles and Land left us to the Westward. Then I observed and found the ship at noone in 61 degrees 20 minutes, and a Sea to the Westward.

Here follows the story of Prickett, before referred to, starting where Hudson leaves off when the ship is at Cape Wolstenholme, at the very entrance to Hudson Bay, which he evidently at that time fondly hoped was the Pacific Ocean, or at least a body of water that led to the South Seas. Prickett's narrative seems simple and straightforward.



MAIN DECK OF A SHIP OF HUDSON'S TIME, LOOKING FORWARD TOWARDS FORECASTLE HEAD

Wee weighed and stood to the South-east, because the Land in this place did lie so. When we came to the Point of the West Land (for we now had Land on both sides of us) we came to an anchor. Our Master sent the Boat ashoare, to see what that Land was, and whether there were any way through. They soone returned, and shewed that beyond the point of Land to the South, there was a large Sea. (They then explored the east shore of Hudson Bay until they arrived at James Bay, at the southerly end.)

Hence we stood up to the North by the West shoare, till wee came to an Island in 53, where we tooke in water and ballast. From hence we passed towards the North; but some two or three dayes after (reasoning concerning our comming into this Bay, and going out) our Master tooke occasion to revive old matters,

MAIN DECK OF THE HALF MOON, LOOKING AFT AT THE HIGH POOP, WHERE WERE LOCATED THE MASTER'S AND MATE'S QUARTERS

and to displace Robert Iuet from being his Mate, and the Boatswaine from his place, for words spoken in the first great Bay of Ice. (There had been trouble brewing since the vessel left Iceland between Juet and Hudson, the former inciting the men against their master.) Then hee made Robert Billet his Mate, and William Wilson our Boat-swaine. Up to the North wee stood, till we reaised Land, then downe to the South, and up to the North, then downe againe to the South: and on Michaelmasse day came in, and went out of certaine Lands: which our Master sets downe by the name of Michaelmasse Bay, because we came in and went out on that day. From hence wee stood to the North, and came into shoald water; and the weather being thicke and foule, wee came to an anchor in seven or eight fathome water, and there lay eight dayes: in all which time wee could not get one houre to weigh our anchor. But the eight day, the wind beginning to cease, our Master would have the anchor up, against the mind of all who knew what belonged thereunto. Well, to it we went, and when we had brought it to a peake, a Sea tooke her, and cast us all off from the Capstone, and hurt divers of us. Here wee lost our Anchor, and if the Carpenter had not beene, we had lost our Cable too: but he (fearing such a matter) was ready with his Axe, and so cut it. Then we stood to the East, and had deepe water againe, then to the South and Southwest, and so came to our Westermost Bay of all, and came to an anchor neerest to the North shoare.

* * * * * * *

Having spent three months in a Labyrinth without end, being now the last of October, we went downe to the East, to the bottome of the Bay: but returned without speeding of that we went for. The next day we went to the South, and the South-west, and found a place, whereunto we brought our ship, and haled her aground: and this was the first of November.—By the tenth thereof we were frozen in: but now we were in, it behoved us to have care of what we had; for, that we were sure of; but what we had not, was uncertaine. (They were now at the head of James' Bay.)

Wee were victalled for six months in good proportion, and of that which was good: if our Master would have had more, he might have had it at home and in other places. Here we were

now, and therefore it behoved us so to spend, that wee might have (when time came) to bring us to the Capes where the Fowle bred (Cape Wolstenholme), for that was all the hope wee had to bring us home. Wherefore our Master tooke order, first for the spending of what we had, and then to increase it, by propounding a reward to them that killed either Beast, Fish or Fowle, as in his Iournall you have seene. About the middle of this moneth of November, dyed Iohn Williams our Gunner: God pardon the Master's uncharitable dealing with this man. Now for that I am come to speake of him, out of whose ashes (as it were) that unhappy deed grew which brought a scandall upon all that are returned home, and upon the action itselfe, the multitude (like the dog) running after the stone, but not at the caster: therefore, not to wrong the living, nor slander the dead, I will (by the leave of God) deliver the truth as neere as I can.

You shall understand, that our Master kept (in his house at London) a young man, named Henrie Greene, born in Kent, of Worshipfull Parents, but by his leud life and conversation hee had lost the good will of all his friends, and had spent all that hee had. This man, our Master would have to Sea with him because hee could write well: Our Master gave him meate and drinke, and lodging, and by meanes of one Master Venson, with much adoe got foure pounds of his mother to buy him clothes, wherewith Master Venson would not trust him: but saw it laid out himselfe. This Henrie Greene was not set downe in the owners booke, nor any wages made for him. Hee came first aboord at Gravesend, and at Harwich should have gone into the field, with one Wilkinson. At Island the Surgeon and hee fell out in Dutch, and hee beat him a shoare in English, which set all the company in a rage; so that wee had much adoe to get the Surgeon aboord. I told the Master of it, but hee bade mee let it alone, for (said hee) the Surgeon had a tongue that would wrong the best friend hee had. But Robert Iuet (the Master's Mate) would needs burne his finger in the embers, and told the Carpenter a long tale (when he was drunke) that our Master had brought in Greene to cracke his credit that should displease him: which words came to the Master's eares, who when he understood it, would have gone back to Island, when he was fortie leagues from thence, to have sent home his Mate, Robert Iuet, in a Fisher-man. But, being otherwise perswaded, all was well. So Henry Greene stood upright, and very inward with the Master, and was a serviceable man every way for manhood: but for Religion he would say, he was cleane paper whereon he might write what he would.

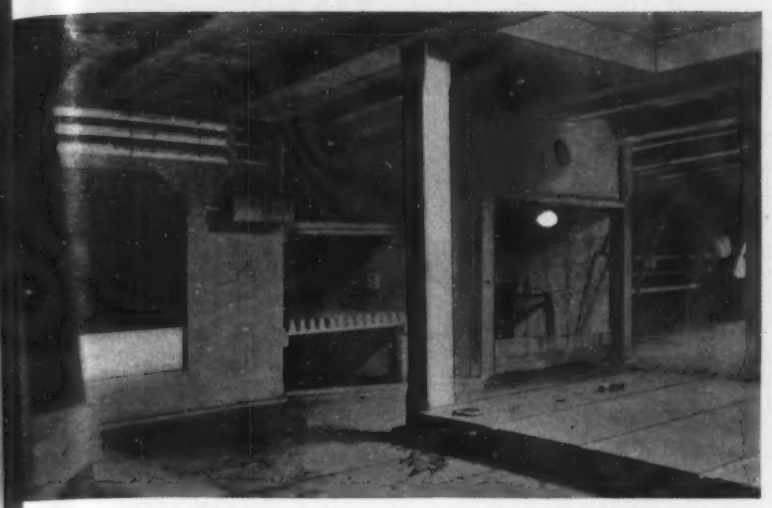
Now, when our Gunner was dead, and (as the order is in such cases) if the company stand in need of any thing that belonged to the man deceased, then it is brought to the Mayne Mast, and there sold to them that will give most for the same: This Gunner had a gray cloth gowne, which Greene prayed the Master to friend him so much as to let him have it, paying for it as another would give: the Master saith hee should, and thereupon hee answered some, that sought to have it, that Greene should have it, and none else, and so it rested.

Now out of season and time, the Master calleth the Carpenter to goe in hand with an house on shoare, which at the beginning our Master would not heare, when it might have been done. The Carpenter told him, that the Snow and Frost were such, as hee neither could, nor would goe in hand with such worke. Which when our Master heard, he ferreted him out of his Cabbin to strike him, calling him by many foule names, and threatning to hang him. The Carpenter told him that hee knew what belonged to his place better than himselfe, and that hee was no House Carpenter. So this passed, and the house was (after) made with much labour, but to no end. The next day after the Master and the Carpenter fell out, the Carpenter tooke his Peece (gun) and Henry Greene with him, for it was an order than none should goe out alone, but one with a Peece, and another with a Pike. This did move the Master so much the more against Henry Greene, that Robert Billet his mate must have the gowne, and had it delivered unto him; which when Henry Greene saw, he challenged the Master's promise: but the Master did so raile on Greene, with so many words of disgrace, telling him, that all his friends would not trust him with twenty shillings, and therefore why should he? As for wages he had none, nor none should have, if he did not please him well. Yet the Master had promised him to make his wages as good as any man's in the ship; and to have him one of the Princes guard when we came home. But you shall see how the devil out of this coyle wrought with Greene, that he did the Master what mischiefe hee could in seeking to discredit him, and to thrust him and many other honest men out of the Ship in the end. To speake of all our trouble in this time of the Winter (which was so cold, as it lamed the most of our Company, and my selfe doe yet feele it) would bee too tedious.

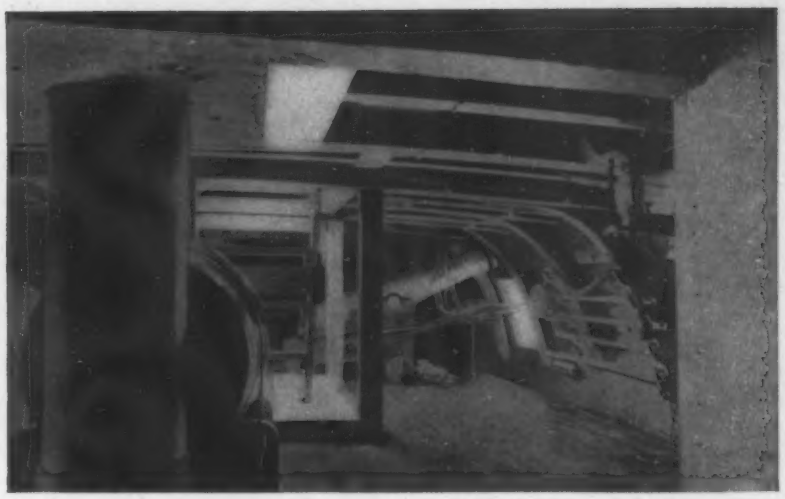
But I must not forget to shew how mercifully God dealt with us in this time; for the space of three moneths wee had such store of Fowle of one kinde (which were Partridges as white as milke) that wee killed above an hundred dozen, besides others of sundry sort: for all was fish that came to the net. The Spring comming, this Fowle left us, yet they were with us all the extreame cold. Then in their places came divers sort of other Fowle, as Swanne, Geese, Duck, and Teale, but hard to come by. Our Master hoped they would have bred in those broken grounds, but they doe not: but came from the South, and flew to the North, further then we were this Voyage; yet if they be taken short with the wind at North, or North-west, or North-east, then they fall and stay till the winde serve them, and then flye to the North. Now in time these Fowles are gone, and few or none to bee seene. Then wee went into the Woods, Hilles, and Valleyes, for all things that had any shew of substance in them, how vile soever: the mosse of the ground, then the which I take the powder of a post to bee much better, and the Frogge (in his engring time as loathsome as a Toade) was not spared. But amongst the divers sorts of buds, it pleased God that Thomas Woodhouse brought home of a budde of a Tree, full of a Turpentine substance. Of this our Surgeon made a decoction to drinke, and applyed the buddes hot to them that were troubled with ach in any part of their bodies; and for my part I confesse, I received great and present ease of my paine. (The early French explorers speak of this turpentine as a cure for scurvy.)

About this time, when the Ice began to breake out of the Bayes, there came a Savage to our Ship, as it were to see and to bee seene, being the first that we had seene in all this time: whom our Master intreated well, and made much of him, promising unto himselfe great matters by his meanes, and therefore would have all the Knives and Hatchets (which any man had) to his private use, but received none but from Iohn King the Carpenter, and my selfe. To this Savage our Master gave a knife, a Looking-glasse, and Buttons, who received them thankefully, and made signes that after hee had slept hee would come againe, which hee did. When hee came, hee brought with him a Sled, which hee drew after him, and upon it two Deeres skinnes, and two Beaver skinnes. Hee had a scrip under his arme, out of which he drew those things which the Master had given him. Hee tooke the Knife and laid it upon one of the Beaver skinnes, and his Glasses and Buttons upon the other, and so gave them to the Master, who received them; and the Savage tooke those things which the Master had given him, and put them up into his scrip againe. Then the Master shewed him an Hatchet, for which hee would have given the Master one of his Deere skinnes, but our Master would have them both, and so hee had, although not willingly. After many signes of people to the North, and to the South, and that after so many sleepes he would come againe, he went his way, but never came more.

Now the Ice being out of the Sounds, so that our Boat might go from one place unto another, a company of men were appointed by the Master to go a fishing with our net. These men, the first day they went, caught five hundred fish, as big as good Herrings, and some Troutes: which put us all in some hope to have our wants supplied, and our Commons amended: but these were the most that ever they got in one day, for many dayes they got not a quarter so many. In this time of their fishing, Henry Greene and William Wilson, with some others, plotted to take the net and the shallop, which the Carpenter had now set up, and so



ALLEY AND BERTH OF THE HALF MOON, TYPICAL OF SHIPS OF HUDSON'S TIME. HERE WERE QUARTERED THE CREW



'TWEEN DECKS OF A VESSEL OF THE TYPE OF THE DISCOVERY, SHOWING GUN PORT AND SMALL CANNON OF THAT PERIOD

to shift for themselves. But the shallop being readie, our Master would goe in it himselfe, to the South and South-west, to see if hee could meet with the people; for, to that end was it set up, and (that way) wee might see the Woods set on fire by them. So the Master tooke the sayne (sein) and the Shallop, and so much victual as would serve for eight or nine days, and to the South hee went. They that remained aboord were to take in water, wood and ballast, and to have all things in a readinesse against hee came backe. But hee set no time of his returne; for he was perswaded, if he could meet with the people, hee should have flesh of them, and that good store; but hee returned worse than hee went forth. For, hee could by no meanes meete with the people, although they were neere them, yet they would set the woods on fire in his sight.

Being returned, hee fitted all things for his returne (to England) and first, delivered all the bread out of the bread roome (which came to a pound a piece for every man's share) and delivered also a Bill of Returne, willing them to have that to shew, if it pleased God, that they came home: and he wept when hee gave it unto them. But to helpe us in this poor estate with some reliefe, the Boate and Sayne went to work on Friday morning, and stayed till Sunday noone: at which time they came aboord, and brought fourescore small Fish, a poore reliefe for so many hungry bellies. Then we wayed, and stood out of our wintering place, and came to an Anchor without, in the mouth of the Bay: from whence we wayed and came to an anchor without in the Sea, where our bread being gone, that store of cheese we had was to stop a gap, whereof there were five, whereat the company grudged, because they made account of nine. But those that were left were equally devided by the Master, although he had counsell to the contrairie: for there were some who having it, would make haste to bee rid thereof, because they could not governe it. I knew when Henrie Greene gave halfe his bread which hee had for fourteene dayes, to one to keepe and prayed him not to let him have any untill the next Monday: but before Wednesday at night, hee never left till hee had it againe, having eaten up his first weekes bread before. So Wilson the Boat-swaine hath eaten (in one day) his fortnights bread, and hath been two or three days sicke for his labour. The cause that moved the Master to deliver all the Cheese, was because they were not all of one goodnesse, and therefore they should see that they had no wrong one them: but every man should have alike the best and the worst together, which was three pounds and a halfe for seven dayes.

The wind serving, we weighed and stood to the North-west, and on Monday at night (the eighteenth day of Iune), we fell into the Ice, and the next day the wind being at West, we lay there all Sunday in sight of Land. Now being here, the Master told Nicholas Simmes, that there would be a breaking up of chests, and a search for bread, and willed him (if hee had any) to bring to him, which hee did and delivered to the Master thirty cakes of a bagge. This deed of the Master (if it bee true) hath made mee marvell, what should bee the reason that hee did not stop the breach in the beginning, but let it grow to that hight, as that it overthrew himselfe and many other honest men: *but there are many devices in the heart of man, yet the counsell of the Lord shall stand.*

Being thus in the Ice on Saturday, the one and twentieth of Iune at night, Wilson the Boatswayne, and Henry Greene came to mee lying (in my Cabbin) lame, and told mee that they and the rest of their Associates, would shift the Company, and turne the Master, and all the sicke men into the shallop, and let them shift for themselves. For, there was not fourteen daies victuals left for all the Company, at that poore allowance they were at, and that there they lay, the Master not caring to goe one way or other: and that they had not eaten any thing these three dayes, and therefore were resolute, either to mend or end, and what they had begun they would goe through with it, or dye. When I heard this, I told them I marvelled to heare so much from them, considering that they were married men, and had wives and children, and that for their sakes they should not commit so foule a thing in the sight of God and man, as that would bee; for why should they banish themselves from their native Countrie? Henry Greene bad me hold my peace, for he knew the worst, which was, to be hanged when hee came home, and therefore of the two he would rather be hanged at home than starved abroad: and for the good will they bare me, they would have mee stay in the Ship. I gave them thankes, and told them that I came into her, not to forsake her, yet not to hurt my selfe and others by any such deed. Henry Greene told me then, that I must take my fortune in the Shallop. If there bee no remedie (said I) the will of God bee done. (In spite of the shortage of food, Hudson was evidently reluctant to give up and turn back.)

Henry Greene went his way, and presently came Iuet, who, because hee was an ancient man, I hoped to have found some reason in him; but hee was worse than Henry Greene, for hee sware plainly that he would iustifie this deed when he came home. After him came Iohn Thomas, and Michael Perce, as birds of one feather; but because they are not living, I will let them goe, as then I did. Then came Moter and Bennet, of whom I demanded, if they were well advised what they had taken in hand. They answered, they were, and therefore came to take their oath.

Now, because I am much condemned for this oath, as one of them that plotted with them, and that by an oath I should bind them together to performe what they had begun, I thought good heere to set downe to the view of all, how well their oath and deedes agreed: and thus it was. *You shall sweare truth to God, your Prince and Countrie: you shall doe nothing, but to the glory of God, and the good of the action in hand, and harme to no man.* This was the oath, without adding or diminishing.

Then I asked Henrie Greene, whom he would put out with the Master? He said, the Carpenter, Iohn King, and the sicke men. I said, they should not doe well to part with the Carpenter, what need soever they should have. Why the Carpenter was in no

more regard amongst them, was; first, for that he and Iohn King were condemned for wrong done in the victuall. But the chiefest cause was, for that the Master loved him, and made him his Mate, upon his returne out of our wintering place, thereby displacing Robert Billet, whereat they did grudge, because hee could neither write nor read. And therefore (said they) the Master and his ignorant Mate would carry the Ship whither the Master pleased: the Master forbidding any man to keepe account or reckoning, having taken from all men whatsoever served for that purpose. Well, I obtained of Henrie Greene and Wilson, that the Carpenter should stay, by whose meanes I hoped (after they had satisfied themselves) that the Master, and the poore man might be taken into the ship againe. Or, I hoped, that some one or other would give some notice, either to the Carpenter Iohn King, or the Master; for so it might have come to passe by some of them that were the most forward.

Now, it shall not bee amisse to shew how we were lodged, and to begin in the Cooke roome; there lay Bennet and the Cooper lame (probably scurvy); without the Cooke roome, on the steere board side, lay Thomas Wydhouse sicke; next to him lay Sydrack Funer, lame, then the Surgeon, and Iohn Hudson with him; next to them lay Wilson the Boatswaine, and then Arnold Lodlo next to him: in the Gun-roome lay Robert Iuet and Iohn Thomas; on the Lar-boord side, lay Michael Bute and Adria Moore, who had never beene well since wee lost our Anchor; next to them lay Michael Perce and Andrew Moter. Next to them without the Gun-roome, lay Iohn King, and with him Robert Billet: next to them my selfe, and next to me Francis Clements: In the mid-ship, betweene the Capstone and the Pumpes, lay Henrie Greene and Nicholas Simmes. This night Iohn King was late up, and they thought he had been with the Master, but he was with the Carpenter, who lay on the Poope, and comming downe from him, was met by his Cabbin-mate, as it were by chance, and so they came to their Cabbin together. It was not long ere it was day: then came Bennet for water for the Kettle, hee rose and went into the Hold: when hee was in, they shut the Hatch on him (but who kept it downe I know not); up upon the Deck went Bennet.

In the meane time Henrie Greene, and another went to the Carpenter, and held him with a talke till the Master came out of his Cabbin (which hee soone did), then came Iohn Thomas and Bennet before him, while Wilson bound his armes behind him. He asked them what they meant? they told him, he should know when he was in the Shallop. Now Iuet, while this was a doing, came to Iohn King into the Hold, who was provided for him, for he had got a sword of his own, and kept him at bay, and might have killed him, but others came to helpe him: and so he came up to the Master. The Master called to the Carpenter, and told him that he was bound; but, I heard no answere he made. Now Arnold Lodlo, and Michael Bute rayled at them, and told them their knaverie would shew it selfe. Then was the Shallop haled up to the Ship side, and the poore, sicke, and lame men were called upon to get them out of their Cabbins into the Shallop. The Master called to me, who came out of my Cabbin as well as I could, to the Hatch way to speake with him: where, on my knees I besought them, for the love of God, to remember themselves, and to doe as they would be done unto. They bad me keepe my selfe well, and get me into my Cabbin; not suffering the Master to speake with me. But when I came into my Cabbin againe, hee called to me at the Horne, which gave light into my Cabbin, and told mee that Iuet would over throw us all; nay (said I) it is that villaine Henrie Greene, and I spake it not softly.

Now was the Carpenter at libertie, who asked them if they would bee hanged when they came home; and as for himselfe, hee said, hee would not stay in the Ship unlesse they would force him: they bad him goe then, for they would not stay him. I will (said hee) so I may have my chest with mee, and all that is in it; they said, hee should, and presently they put it into the Shallop. Then hee came downe to mee, to take his leave of mee, who perswaded him to stay, which if he did, he might so worke, that all should bee well: hee said, hee did not thinke, but they would be glad to take them in againe. For he was so perswaded by the Master that there was not one in all the ship, that could tell how to carrie her home; (saith he) if we must part (which wee will not willingly doe, for they would follow the ship) hee prayed me, if wee came to the Capes before them, that I would leave some token that wee had been there, neere to the place where the Fowles bred, and hee would doe the like for us: and so (with teares) we parted. Now were the sicke men driven out of their Cabbins into the Shallop; but Iohn Thomas was Francis Clements friend, and Bennet was the Coopers, so as there were words betweene them and Henrie Greene, one saying, that they should goe, and the other swearing that they should not goe, but such as were in the shallop should returne. When Henrie Greene heard that, he was compelled to give place, and to put out Arnold Lodlo, and Michael Bute, which with much adoe they did.

In the meane time there was some of them that plyed their worke, as if the Ship had beene entred by force, and they had free leave to pillage, breaking up Chests, and rifling all places. One of them came by me, who asked me, what they should doe. I answered, hee should make an end of what hee had begun; for I saw him doe nothing but sharke up and downe. Now, were all the poore men in the Shallop, whose names are as followeth: Henrie Hudson, Iohn Hudson (his son), Arnold Lodlo, Sidrack Faner, Phillip Staffe, Thomas Woodhouse, or Wydhouse, Adam Moore, Henrie King, Michael Bute. The Carpenter got of them a Peece, and Powder, and Shot, and some Pikes, an Iron Pot, with some meale, and other things.

They (the ship) stood out of the Ice, the Shallop being fast to the Sterne of the Shippe, and so (when they were nigh out, for I cannot say, they were cleane out) they cut her head fast from the Sterne of our Ship; then out with their Top-sayles, and towards the East they stood in a cleere Sea. In the end they tooke in their Top-sayles, righted their Helme, and lay under their Fore-sayle till they had ransacked and searched all places in the Ship. In the Hold they found one of the vessels of meale whole, and the other halfe spent, for wee had but two; we found also two firkins of Butter, some twenty seven piece of Porke, halfe a bushell of Pease, but in the Master's Cabbin we found two hundred of bisket Cakes, a pecke of Meale, of Beere, to the quantitie of a Butt, one with another. Now, it was said, that the Shallop was come within sight; they let fall the Main-sayle, and out with their Top-sayles, and flye as from an Enemy.

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The eight and twentieth day of July the Boat went to Digges his Cape, for Fowle, and made directly for the place where the Fowle bred, and being neere, they saw seven Boates come about the Easterne point thowards them. When the Savages saw our Boate, they drew themselves together, and drew their lesser Boates into their bigger: and when they had done, they came rowing to our Boat, and made signes to the West, but they made readie for all assayes. The Savages, come to them, and by signes grew familiar one with another, so as our men tooke one of theirs into our Boate, and they tooke one of ours into their Boate. Then they carried our man to a Cove where their Tents stood towards the West of the place, where the Fowle bred: so they carried him into their Tents, where he remayned till our men returned with theirs. Our Boat went to the place where the Fowle bred, and were desirous to know how the Savages killed their Fowle: he shewed them the manner how, which was thus, They take a long Pole with a snare at the end, which they put about the Fowles necke, and so plucke them downe. When our men knew that they had a better way of their owne, they shewed him the use of our Peeces, which at one shot would kill seven or eight. To be short, our Boat returned to their Cove for our man, and to deliver theirs. When they came they made great joy, with dancing and leaping and stroking of their breasts: and Henry Greene (more than the rest) was so confident, that (by no meanes) we should take care to stand upon our Guard: God blinding him so that where hee made reckoning to receive great matters from these people, he received more than he looked for, and that sud

(Continued on page 442.)

Lifting the Fog from Self-Starters and Lighting Systems for Motor Boats

By STANLEY PETMAN McMINN, Asso. S. A. E.

It was one of those first warm days in spring that make you want to take off your coat just for the joy of being out in the sun by the sparkling water, and the club-house veranda was crowded. But Jonesey didn't give a hang for the club-house veranda, or the sun, or any other tarnal thing in creation. He was going to get that engine started if it took all day. So he spit on his hands, to use inelegant language, grabbed the starting crank with a glare at the engine and gave it a heave that almost started the garboards.

His exact words as ne carefully and painfully separated himself from the galley stove are not a matter of record. Nor has any chart of the constellations he saw, and of those he imagined he saw, ever been made. He "cussed" the engine and he "cussed" the starting crank, but most of all he "cussed" the galley stove. And if he had no mental vision of a tiny electric motor and a button it was not because he had not seen that chauffeur slide in behind his steering column and, with no more exertion than is required to advance the spark, start his motor—from his seat!

He wiped the sweat of honest toil from his brow. It was hot down there in the two-by-four engine room, and, anyway, the sight of the galley stove irritated him. He clambered up the three steps to the cockpit. That arrangement of the chauffeur's gave him furiously to think. If they could do such things on automobiles why couldn't they do 'em on motor boats. Eh? Why couldn't they do 'em on motor boats? he reiterated, glaring at an unoffending binnacle lamp.

Somewhere, someone has asked himself those very questions, though if that someone had taken the trouble to visit the New York Motor Boat Show he might have saved himself the breath. For he would have seen that already the seed that has been sown by automobile engineers has taken root in the motor boat field and that it gives promise of becoming an uncommonly healthy plant—an electric plant, be it added—in the not far distant future.

He would have seen two boats equipped with widely different combined electric lighting and engine starting systems fitted in almost exactly the same manner as they are fitted to automobile engines, and if still more convincing argument were needed to bring home the truth he could have found three engines—big ones, too—fitted with three more such systems, all different, to say nothing of a brand-new compressed air starting system that was designed primarily for automobile work.

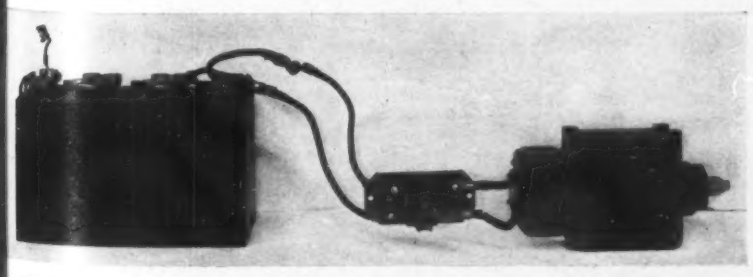
It is, perhaps, surprising that marine engine builders have not been quicker to adopt engine starting apparatus—"self-starters," as they are popularly, though erroneously, styled—than have their landsmen brothers, for the advantage is all on the nautical side. It is true that there have been developed one or two combined electric lighting and engine starting systems for marine use only; but they are heavy, cumbersome devices that are in marked contrast to the diminutive, though none the less efficient, automobile apparatus.

To the marine engine builder the problem of perfecting such apparatus, or rather of applying it, is very much less involved than it is in the case of the automobile engineer. The marine engineer has to deal with what to all intents and purposes is a constant-speed motor, and he has in which to work three or four times the space available on an automobile. The automobile engineer's problem is augmented by the fact that he must provide for constantly and widely varying engine speeds, and this feature alone has caused more than one gray hair.

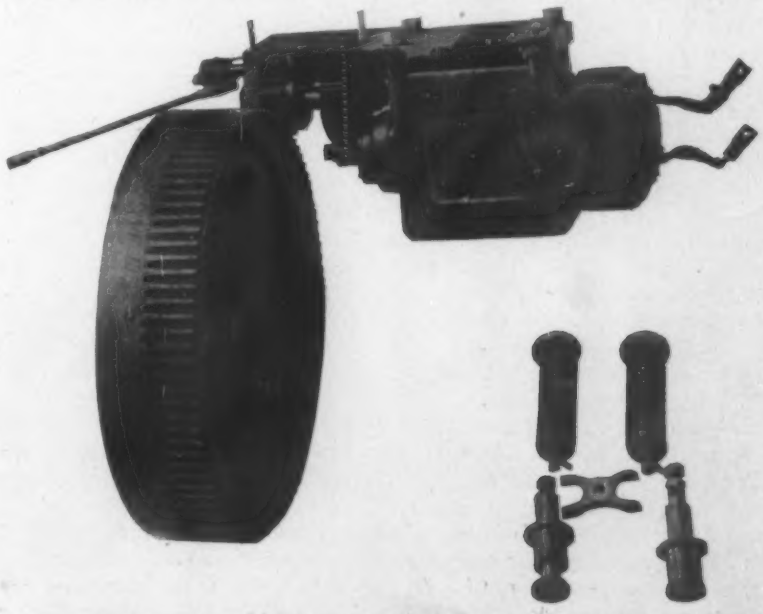
To provide for electric lights alone is comparatively simple; it requires merely a generator belted to the flywheel, and a storage battery. To provide a means of starting the motor—of starting it positively every time—is not so simple. Still, strange as it may seem, rolling the two problems into one and solving them both at one fell swoop is a great deal simpler than solving them separately. Judging by the way the automobile engineer has tackled it, the solution is bound to result in an automatic system that provides an unlimited source of current for ignition and lighting, starts the motor every time without fail and without the slightest possibility of danger to the operator from back fire—remember Jonesey and the galley stove—and is no more difficult to care for than is a high-tension magneto. And not so very long ago high-tension magnetos were unheard of on motor boat engines.

Such combined systems are beautifully simple. They all operate on exactly the same principle, and the majority of them contain but three essential elements—a generator, a battery and a small electric motor. The generator charges the battery and incidentally maintains it in a fully charged condition quite automatically, and the battery supplies the "juice" for the lights, the ignition and the tiny electric motor that never tires and always is ready and willing to "turn over" the engine.

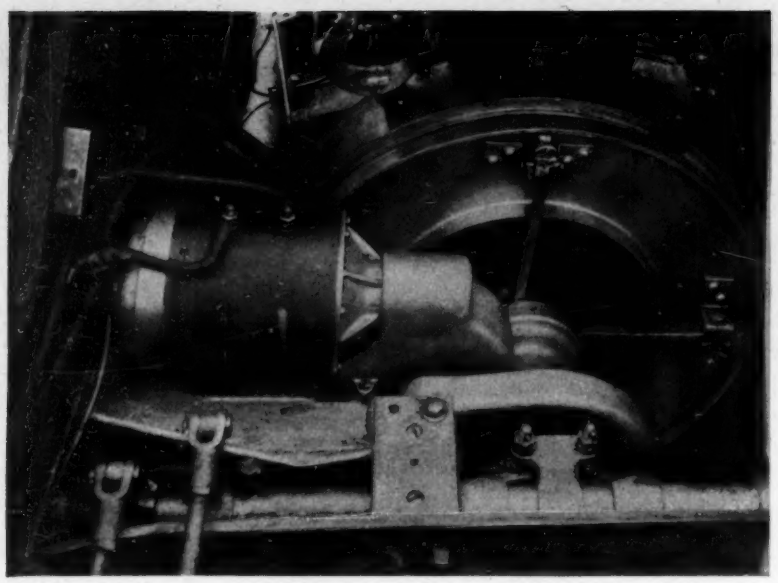
Two of these elements, the generator and the motor, can be combined in a single machine, and for automobile work this combination commonly is made. An explanation for it may be found in the fact that any direct-current generator will operate as a motor if it is properly connected to a suitable source of energy, such as a storage battery. For marine work, however, it has generally been found better to separate these two units, making each an individual part which, in the event of trouble, does not affect the other; the separation also facilitates mounting and affords a slightly better distribution of weight. Thus, with the two-unit



BATTERY, TIMER AND MOTOR OF LEECE-NEVILLE LIGHTING AND STARTING SYSTEM



IN THE LEECE-NEVILLE SYSTEM THE ENGINE IS TURNED OVER BY MEANS OF THE STARTER ENGAGING A GEARING CUT IN THE PERIPHERY OF FLYWHEEL OR CONNECTED TO FRONT END OF CRANK SHAFT



IN THE HARTFORD SELF-STARTER THE STARTING MOTOR IS CONNECTED TO A FORWARD EXTENSION OF THE CRANKSHAFT

system, derangement of the starting motor still permits the generator to be used; and if the generator should fail through any cause, though this is unlikely, its failure does not prohibit the use of the motor.

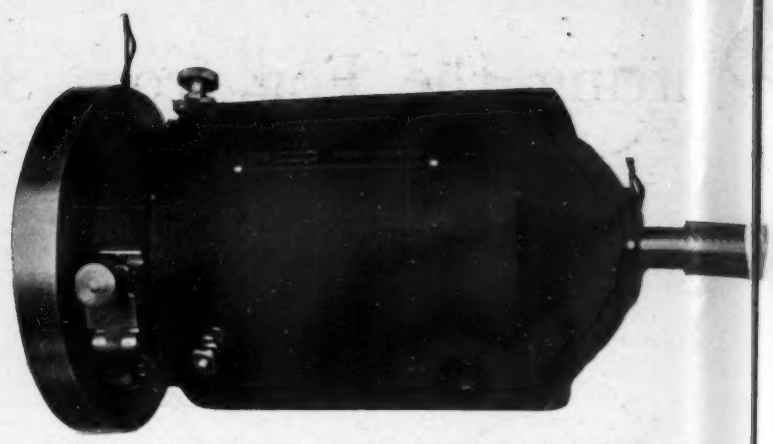
Of the five different systems that put in an appearance at the New York Show all were of the two-unit type. Despite this fact there is apparent in them a wide difference in constructional details and no little variety in the methods of connecting both the generator and the motor to the engine. Quite naturally, each designer has his own preference, and his apparatus has been worked out to achieve his own ideas of maximum efficiency under average conditions and in the hands of the non-expert operator.

It is a comparatively simple matter to fasten a generator or a motor in place, on brackets or supports cast on the crank case, with the aid of a couple of bolts. Generally, where such brackets are intended for the support of the generator they are placed close to the timing gear train, where little alteration in existing design is necessary to provide a driving means. This is what has been done in four of the five systems that form the basis of this article. In the Leece-Neville system, which appeared on a high-speed Leow Victor engine; the Hartford system, on an Elco express launch; the Gray & Davis system, which was fitted to a fast and sleek-looking Lawley runabout, and the Ward Leonard system, applied to a great heavy-duty Kent engine that appeared entirely too big for the diminutive apparatus, the methods of mounting the generators are quite similar. In each case it is carried on a small bracket bolted to the crank case.

In the Gray & Davis, the Hartford and the Ward Leonard, the method of driving is simple in the extreme, and consists merely of a V-section belt running over a pulley on a forward extension of the crankshaft. In the Leece-Neville system the method is slightly different, the armature shaft of the generator being directly connected to the timing gear train by means of a short shaft. Such connection requires a generator that will operate at comparatively slow speed, for on a four-cylinder, four-cycle engine camshaft speed is the same as crankshaft speed.

Without doubt one of the greatest problems with which the manufacturer of such apparatus has had to wrestle has been the provision of some means of positively regulating the output of the generator, and it is in this respect that the problem as applied to marine engines is comparatively simple, for the speed of the average motor boat engine varies but little compared with the speed of the automobile engine.

Obviously the simplest way around the difficulty is to maintain the armature speed of the generator constant, and it is this method that the manufacturers of both the Gray & Davis and the Hartford system have adopted. In both of them speed is governed by a centrifugal friction device of substantially the same pattern. The control of the generator output in the Leece-Neville and the

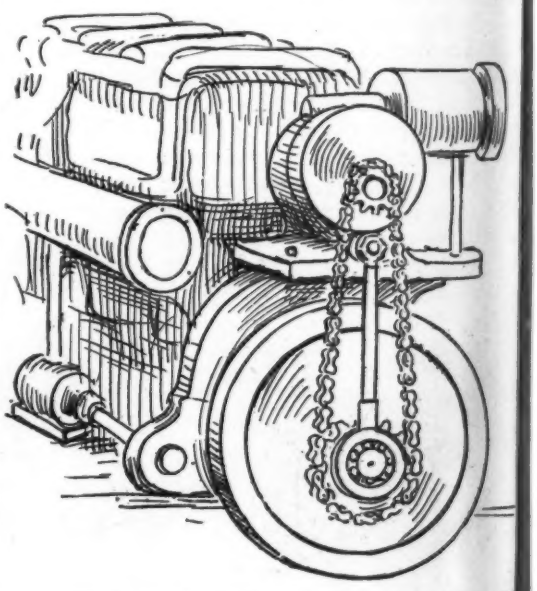


MOTOR OF HARTFORD SELF-STARTING SYSTEM. IT MEASURES ONLY 7½ BY 4½ INCHES

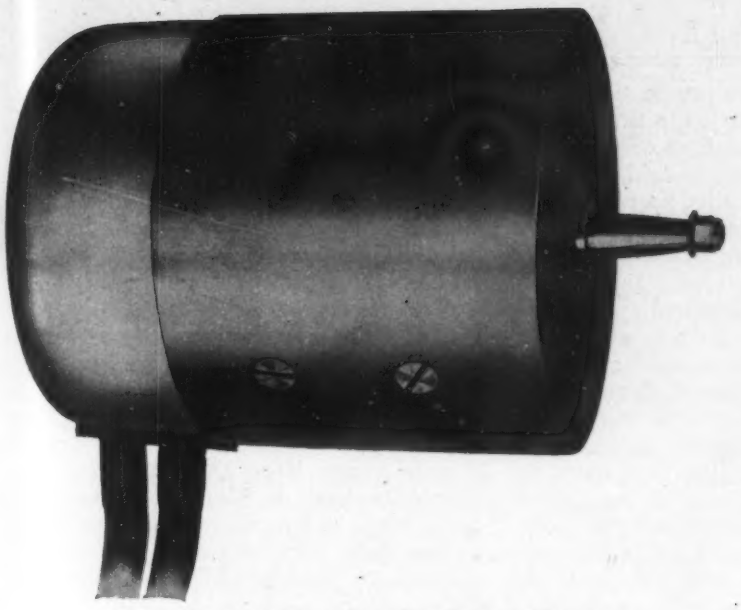
Ward Leonard systems is accomplished quite differently. In the former, regulation is made an inherent characteristic of the machine by the method of winding. That is to say, the winding is so arranged that, up to a certain critical speed, the output will gradually rise with the increase in armature speed and according to the demand for current made by the battery and the lamps. Above that critical speed the output curve flattens out and the increase in current is negligible.

In the Ward Leonard system the problem is attached in a still different manner. The regulator is a tiny electro-magnet and operates in conjunction with a small resistance coil. Immediately the output rises to 10 amperes the current passing through the magnet attracts an arm carrying a contact which normally rests against another contact under the influence of a spring. When these two contacts are separated the little resistance coil is placed in series with the field, thus reducing the field strength and, consequently, the output. As soon as the output drops to 9.9 amperes the contacts come together again. The arm of the magnet, therefore, vibrates back and forth continually and maintains the amperage constant. Its rate of vibration is so great, however, that it is not appreciable in any flickering of the lamps.

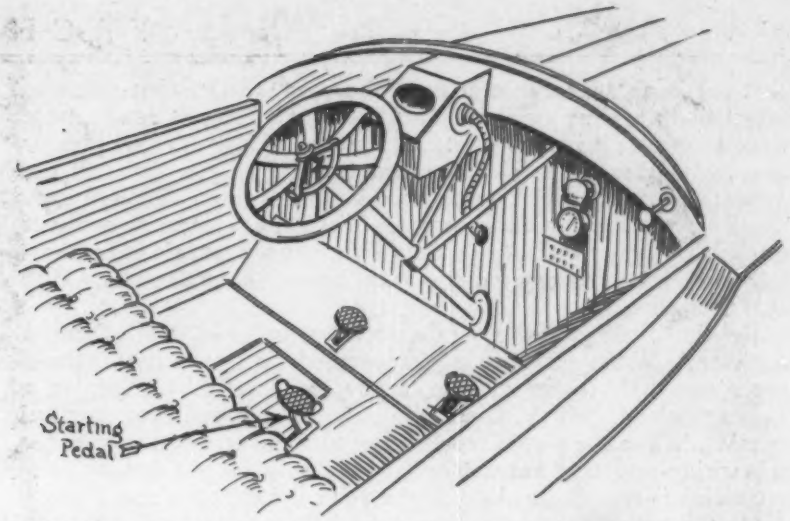
In the single system designed to furnish current for lights alone—the Rushmore, which was mounted on a medium-duty Sterling engine—the method of mounting the dynamo and of regulating output is radically different from any of the others. The generator was mounted on a small bracket bolted to the after end of the crank case and driven by a V-section belt running over a pulley mounted directly on the clutch shaft; the whole installation was as simple as possible, and it had the additional advantage that the dynamo was fairly high and, consequently, protected from the effect of bilge water. The dynamo is of the shunt wound type, and, in addition, is equipped with what in engineers' parlance is styled a "bucking coil." When the resistance is low, as when the dynamo armature is rotating slowly and little current is being generated, very little current passes through the "bucking coil," and the strength of the field, and consequently the output of the dynamo, increases in proportion to the increase in the speed of the armature. When the speed reaches a predetermined



HARTFORD ELECTRIC STARTER ATTACHED TO SPEEDWAY MARINE ENGINE



GRAY & DAVIS SIX-VOLT ELECTRIC STARTER



DASHBOARD OF LAWLEY RUNABOUT, SHOWING STARTING PEDAL OF GRAY-DAVIS ELECTRIC STARTER

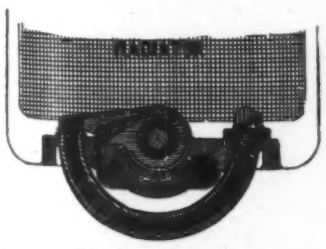
limit, the passage of the increased current through the coil of iron wire heats it, thus increasing its resistance and forcing part of the current to pass through the "bucking coil," the result being that the field strength is reduced and the output maintained practically constant.

In any such electric lighting system some means of automatically breaking the circuit between the generator and the battery must be provided, for otherwise the battery would promptly discharge itself through the generator as soon as the engine stopped. Generally, such devices are of the electro-mechanical type, and are so constructed that when the generator voltage rises to the point where it is greater than the battery voltage magnetism causes two contacts to come together, thus establishing the circuit. Obviously, as soon as the generator voltage drops below the battery voltage, as when the engine is stopped, the contacts separate, thus protecting the battery.

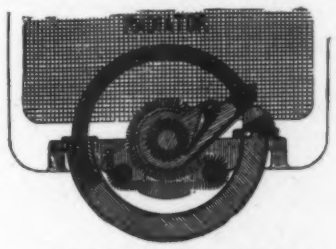
Just where the cut-out, or circuit breaker, or relay (the terms are synonymous in this sense), is placed, is a matter of small moment, provided only that it is accessible. The favored place is the "dash," as the engine bulkhead not inappropriately is coming to be styled. In the Rushmore generator it is mounted in a small casing on top of the machine, though in all the other systems it is mounted on the "dash." An ampere meter, which forms part of the equipment in each case, serves to indicate whether the generator is charging or not and the amount of current drawn by the lamps.

To get back to the starters: To "turn over" a heavy marine motor obviously requires considerable power, and in order to obtain this power from a tiny electric motor operating on about six volts (none of the systems described operates on a greater voltage), the electric motors run at comparatively high speed. The favorite method of mounting the starting motor is to place it on a bracket and to connect it to the engine through the intermediary of gearing cut in the periphery of the flywheel. This is the method that is employed in the Leece-Neville, the Gray & Davis and the Ward Leonard systems. (See cut.)

On the armature shaft of the motor there is a slidably mounted



Ready to Crank



The Operation Completed

THE CRESCENT AIR-STARTING SYSTEM WHICH HAS BEEN APPLIED TO GRAY MARINE MOTORS

pinion, and between it and the foot button that serves to shift the gear the starting switch is placed. Thus a single depression of the starting button enmeshes the gears and switches on the current from the battery. As soon as the engine takes up its cycle of operation the button is spring-returned to its normal position and the gears automatically thrown out of engagement.

As small and light as are the motors in the three systems mentioned above, the motor employed in the Hartford system is even more so, this being possible by reason of the extraordinarily high speed at which it operates. Its normal speed is no less than 7,000 revolutions a minute, which accounts, in a measure, for its rating—namely, 1/3 horsepower. It measures just 7½ x 4½ inches, overall dimensions. Instead of being geared to the flywheel, it is connected to a forward extension of the crankshaft. In order to permit the high speed at which it operates, it drives through a double reduction gearing in which the first step is obtained through worm gearing and the second through regular spur gearing. To increase the efficiency of the motor and permit it to maintain its high rotative speed at the moments when the pistons of the engine are passing compression dead centers, it is fitted with a tiny flywheel weighing approximately four and one-half pounds. Between the motor and the gearing there is a roller clutch mechanism which permits the gasolene engine to overrun the motor, thus allowing for the gears to be constantly in mesh. The total reduction between the electric motor and the gasolene engine is 125 to 1.

From all that has gone before it may be judged that the combined electric lighting and engine starting system that has proved so efficient in the automobile world during the past year is suitable for marine work and is quite possible of attachment just as it is. The demand for "self-starting" automobiles has made it absolutely imperative that such apparatus be perfected. Given the small amount of attention it requires, to see that it is kept in working order, that connections are tight, etc., the electric engine starter is 100 per cent. efficient. It will crank the engine *every* time; and this fact, combined with the added advantage of electric lights, so easily obtainable with such a system, has made it a favorite with manufacturers and users. There are abundant reasons why such a combined system might well be used on the modern motor boat—the reduction of the fire risk, which comes automatically with the adoption of electric lights; the elimination of labor and, what is even more to the point, the elimination of possible personal injury due to back kicks. It would seem to be only a matter of time, and not a very long time at that, when the demand for such equipment on the modern motor boat will be as insistent as is the demand for it on the modern automobile.

Other points in which the electric motor starter shines with particular brilliancy are its ability to operate with equal facility in either direction—backward or forward—and the fact that it has plenty of "juice" available for a loud-sounding electric signal to take the place of the time-honored air blast.

The single, easily attachable exponent of the air self-starter

that put in an appearance at the Show was the Crescent. It was attached to a Gray engine. The Crescent starter is really more than a starter; it is a complete air system, though the compressor and the starter are so closely connected and so compact that the appearance of the whole easily may be misleading. Though each of the separate units incorporates distinctive features, without doubt the engine starting device is the most unusual; it is absolutely unique in conception and is unlike anything else of its kind on the market.

Briefly, it consists of a semi-circular cylinder in which there is a piston. When a charge of compressed air is admitted behind the piston it is forced around, a pawl automatically engaging a ratchet wheel, which takes the place of the ordinary starting crank. When the piston reaches the opposite end of the cylinder it is spring-returned, automatically, to its original position, and the operation is repeated as long as the valve is held open and there is air in the tank.

The air compressor is of the two-cylinder opposed type and is air-cooled, flanges cast on the cylinder heads assisting in the radiation of heat. The most distinctive feature of the compressor is its method of mounting and the means by which it is driven. It is mounted directly in front of the starter—the manufacturers style it an "air crank"—to which it is attached. The engine shaft extends through the "air crank" to the compressor, connection being made by a clutch operated by a flexible cable. Thus, when the air pressure drops below a predetermined limit, it is merely necessary for the engineer to connect the compressor, which is independent of the "air crank," to refill the tank. Obviously the system should prove of value for addition to engines already installed; and as the actual work necessary in the fitting could be done by any amateur mechanic, there is little reason why it should not be adopted by those who desire an engine starter of some sort, but who are inclined to look askance at amateur installation of electrical apparatus.

In any article on electric engine starters mention should be made and credit given to the originator of the electric engine starter idea. Mr. Vincent G. Apple is said to have built the first self starter in the year 1900. This was applied to a stationary gasolene engine and used in connection with a house lighting equipment. A few years later the equipment was shown at one of the automobile shows in New York; but, as is sometimes the case, it anticipated the market at that time. At the first indication that the time for self starters was here a model similar to this original one was produced and was successfully used during the season of 1911 and of 1912. As yet this Apple equipment has not been used particularly on marine engines, though there is no question that it could be satisfactorily arranged for starting motor boat engines as well as automobile engines, and it is probable that this will be eventually done to use in connection with the Apple lighting systems.

How to Run Power Boat Races

Part III. Some Pointers for the Skipper on Handling his Boat and on the Etiquette of the Game

By HERBERT L. STONE

IN the two previous articles in this series we have covered the various methods of handicapping power boats for racing, and also the duties of the regatta committee in laying out courses and in looking after the proper details of the race—a task which, it was seen, requires a great deal of careful thought and planning, as well as much hard work, if the racing is to be made successful. There is one other phase of the question, however, which should be considered, and that is the handling of a boat so as to get the best results out of her, while observing, at the same time, those rules of the game, a proper regard for which not only mark the good sportsman but make the racing pleasanter for all, from the competitors to the regatta committee.

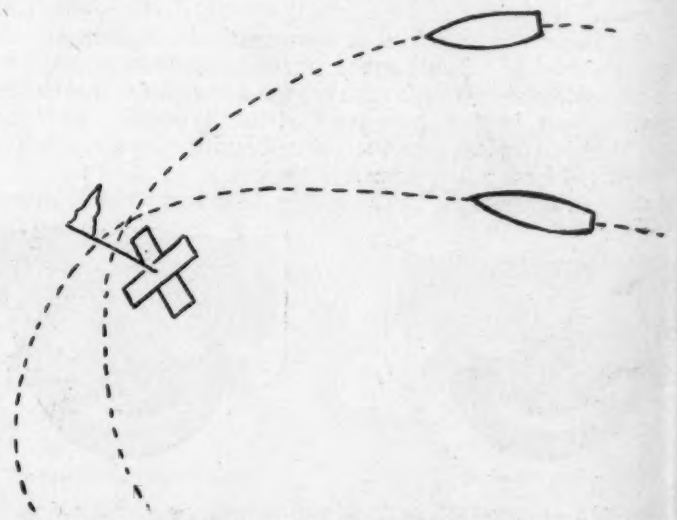
It is not, of course, the province of this article to tell a man how he should handle his boat. This is something that cannot be done on paper except in a very general way. A man can learn best by experience how to take advantage of every second of time, and so many contingencies are apt to arise in a race which cannot be foreseen that no hard or fast set of rules can be laid down.

First of all, when you have entered a race and have sent in your entry blank, properly filled out with your boat's rating, read over the instruction sheet carefully, so that you know the very last detail of the race and won't have to bother the committee or the other contestants with questions that are already answered in the printed instructions. It is surprising how men who have been racing for some time will come around the committee boat two or three minutes before the start asking all sorts of questions as to time of start, on which hand buoys are left, etc., when they have probably the answers to these questions in their coat pockets.

Keep away from the committee boat as much as possible before the start. You may have to go there to get your racing number, but after you have received it and tacked it on your boat get away from the line; and if you have to tie up somewhere until the start, do so alongside of some other boat or to the club float.

Be sure to see personally that your engine is in shape in plenty of time before the start, so that when the warning gun goes off you will not find that something has been forgotten that will have to be done at the last minute. It is funny how some skippers will hang around the club bar until within five or ten minutes of the start and then jump aboard and open her up, and appear surprised if the engine does not run the way it should. If there is work to do on the engine, see that it is finished in plenty of time, so that not only will you not be hung up at the line, but will not be anxious about whether or not you will get there in time.

It is a wise precaution to compare your watch with the watches or chronometer of the regatta committee some time before the race, so as to see that they synchronize; and if you are steering a high-speed boat it is advisable to have a wrist watch, so that you can note accurately the passage of time between the warning and starting guns. This is not necessary in cruising boats, in which case some member of the crew can count out the minutes between the various guns, singing out every ten seconds of the last minute



IN TURNING A MARK IT IS BETTER TO SWING FIRST AND CUT THE BUOY CLOSE, AS THE UPPER BOAT IS DOING, THAN TO SWING WIDE AFTER TURNING

and giving *every second* of the last ten before the starting gun. Of course, all these preparations are for the purpose of hitting the line as soon after gunfire as possible, with the boat going at top speed.

The best skipper is usually the one that has his boat on the line practically with the gun. It is surprising to see some power boat owners, especially of cruising or open boats, hang back of the line with their boats absolutely dead until the starting gun is given, when they throw in the clutch and, by the time they have overcome the inertia of the boat and covered the several hundred feet to the starting line, the other boats, if they are onto the job, are well on their way to the first mark.

If you are racing a speed boat, it is well to try several starts sometime before the race, if the starting line has been established, or if you know where it is to be located, taking a range on shore that you can recognize some half or a quarter-mile back of the line and letting her go from it down to the line at full speed, noting the time it takes. Then when the actual race starts you can open her up opposite these ranges or marks, knowing that you will strike the line under full speed with gunfire, if you have timed yourself correctly. In the International Race two years ago the skipper of the American boat, Dixie IV, showed his ability by going up the course about a mile and then coming down, opened up wide, so as to hit the line practically with the gun in each of the races. This is not quite as necessary in a race for cruising boats, but the same principle should apply; and where the speed of boats are practically fixed quantities, as with power boats, every second's advantage gained at the start counts. If you find you are at the line a fraction of a second too soon, you can usually sheer off and run down to one side or the other so as to kill a few seconds.

It is wise, if possible, to stick to the inside edge of the course, so you will not have to cross it to round the stakes closely, the rail position, as it was called in horse-racing days, usually being the best. Of course, in all these maneuverings you will have to give way to the rights of the other boats, and especially in speed boat races it is well not to crowd the contestants too closely, as a good deal can happen in a very short space of time with a boat traveling over 30 miles an hour. If, however, you do happen to be on the outside of the course and are sure that you have room, you can cross over to the inside in front of the other fellows, thereby giving them your wash, usually with disastrous effects to the other boats. By the same token always avoid, if possible, the other man's wash, as, with a light hydroplane or even displacement boat traveling at high speed, broken water is hard to negotiate.

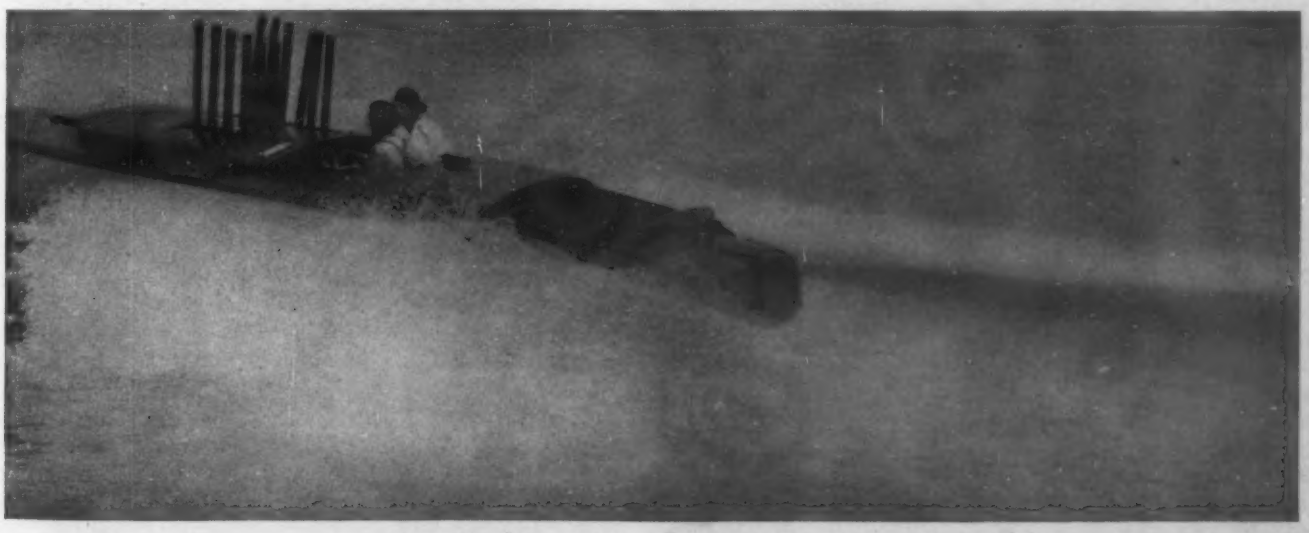
In taking the turns, take them as closely as possible with due regard to safety. Some boats will turn in a shorter radius than others, and the correct turning circle can only be ascertained by knowing your boat and by repeated trials. It is usually considered the better practice to swing around the buoy on the last of the turn than on the first of it, as in the former case you get straightened out sooner and also prevent any other competitor from cutting in on you if you swing wide after rounding the mark.

Another point to bear in mind in racing, particularly where there are no handicaps to be taken into consideration, is that you are out to beat the other man, and all that is necessary is to go fast enough to keep ahead of him. Don't try to race your head off and make a record when it is not necessary. Better play safe and save the engine than make a runaway race of it. Probably many races have been lost in this way, by overtaxing the engine before the course was run.

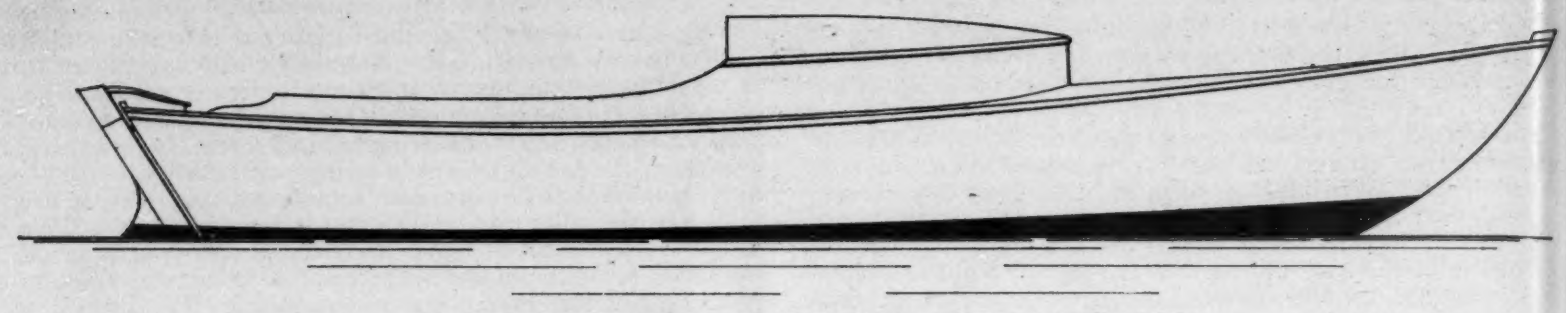
The same rules for having your boat under full headway when the starting signal goes holds good when the boats are started on their handicaps as when all together. In this case, you know the time of your start, and it is just as easy to have your boat under full speed and down on the line when that time is up as to have her lying dead waiting for your particular gun to go off. Only you must know how your watch compares with the committee's time.

One thing more: When you have finished the race and there are other boats to finish behind you—which, of course, you hope will be the case—keep away from the committee boat and don't bother those aboard of her by running alongside and asking what your corrected time was, whether you won the race, where the other boats are, etc. That is information that you will get just as soon as the committee has finished its work and figured the times, and you can get it just as well from the bulletin board as you can from the overworked committee. Be sure to keep off the course, so as not to get in the way of the other boats or to hinder in any way any of the other contestants. Also, don't protest any of the other boats unless it is absolutely necessary. Protests only make hard feeling, in many cases are not justified, and are merely the result of one or more of the contestants being poor losers.

Every man wants to win, but what you should race for is the zest of keen competition, and not for the bauble hung up as a prize; and it is better to lose a race than to win it by a quibble over some technicality, with its attendant ill feeling. Be "on the job" every minute; learn to think quickly, and act quickly and try to foresee the various contingencies that arise. Watch your competitors, and be quick to take advantage of their mistakes. Don't follow another man into a mistake by going on the supposition that he knows what he is doing and that, if he is ahead of you, it is right for you to follow him blindly. Take every fair advantage you can, but never, for the sake of winning, stoop to seek unfair advantages. And remember at all times that even a fraction of a second is too precious to be wasted.



SWINGING AROUND A TURN IN A SMOTHER OF FOAM



THE SAILBOAT-LAUNCH WITH RIG TAKEN OFF AND USED AS A POWER BOAT

A Light-Draft Combination Sailboat-Launch

A Boat for Shallow Waters for Those who Want the Advantages of a Power Boat Without Abandoning Sail

Designs by Charles H. Hall

MANY of the readers of YACHTING will undoubtedly remember the description in the December issue of the 35-foot whaleboat model sailing and power launch Idler—an experiment that was tried out on Massachusetts Bay last summer, and which "made good" to the satisfaction of the owner. Since then, numerous requests have come to us to include, as one of our ideal boat series, a combination launch and sailboat, or, in other words, a boat that will handle equally well under power or under sail, and that will not draw over two feet of water. In response to this demand for a type of boat which, we believe, should make a very strong appeal to many of those living on shallow waters, who want primarily a power boat and, at the same time, one that will handle well under sail, we have had Mr. Charles H. Hall, of the Milton Boat Works, design a little 22-foot boat which would fulfill these requirements.

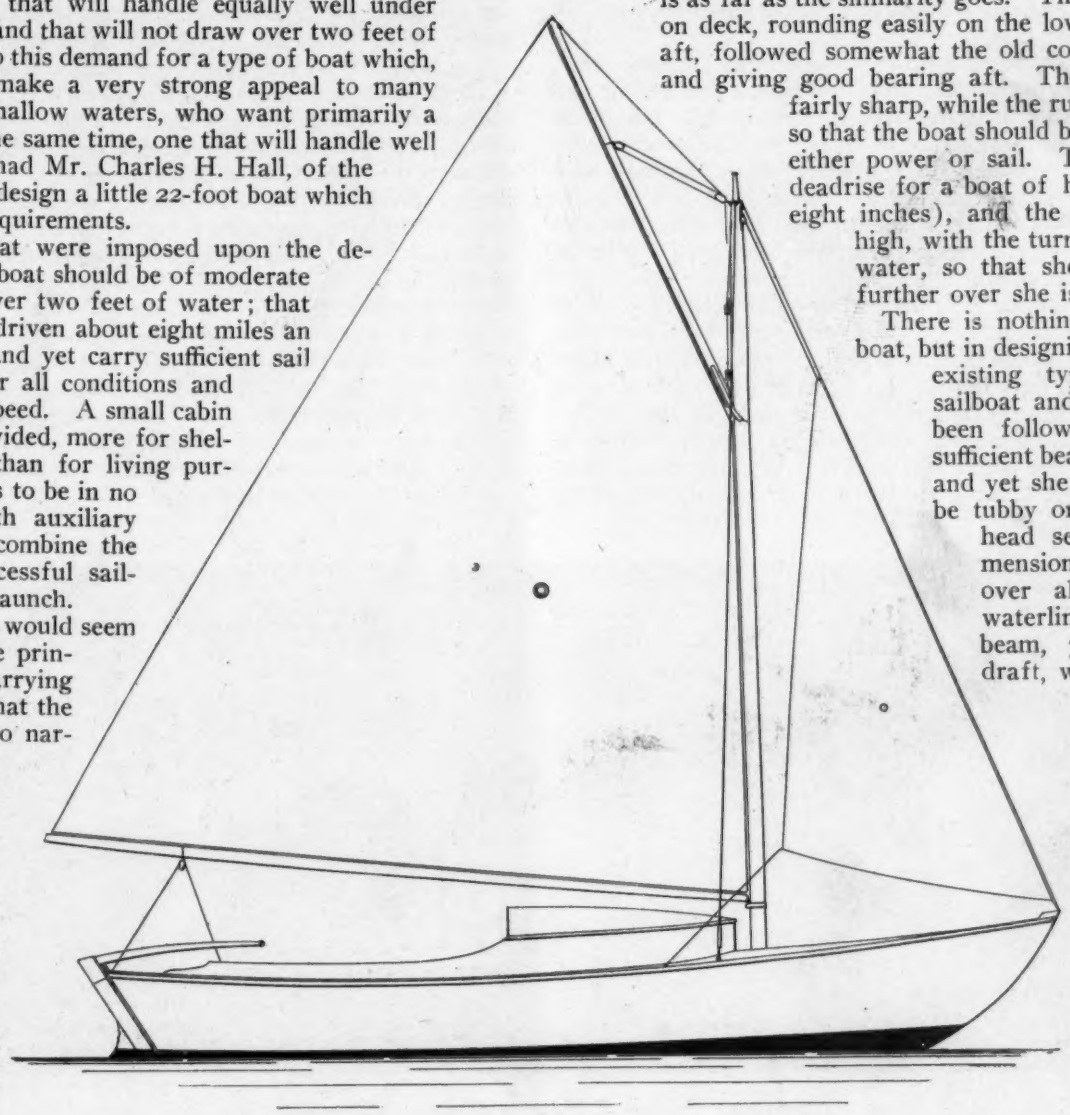
The conditions that were imposed upon the designer were that the boat should be of moderate size and draw not over two feet of water; that she should be easily driven about eight miles an hour under power, and yet carry sufficient sail to handle well under all conditions and have a fair turn of speed. A small cabin house was to be provided, more for shelter for the cockpit than for living purposes. The boat was to be in no sense a sailboat with auxiliary power, but was to combine the elements of the successful sailboat and the power launch.

At first glance, this would seem a difficult task. The principal drawback to carrying sails on a launch is that the average launch is too narrow and has not sufficient bearing surface to permit of an efficient rig being carried, while her under-water lines are not designed with any regard to sailing efficiency, especially in windward work, or to being driven at an angle of heel. However, sailboats of proper model can be easily driven on an even keel, and it is possible to incorporate the easy waterlines, the deadrise and easy bilges of the sailboat in the conventional power boat model; and this is what has been done with the craft under discussion.

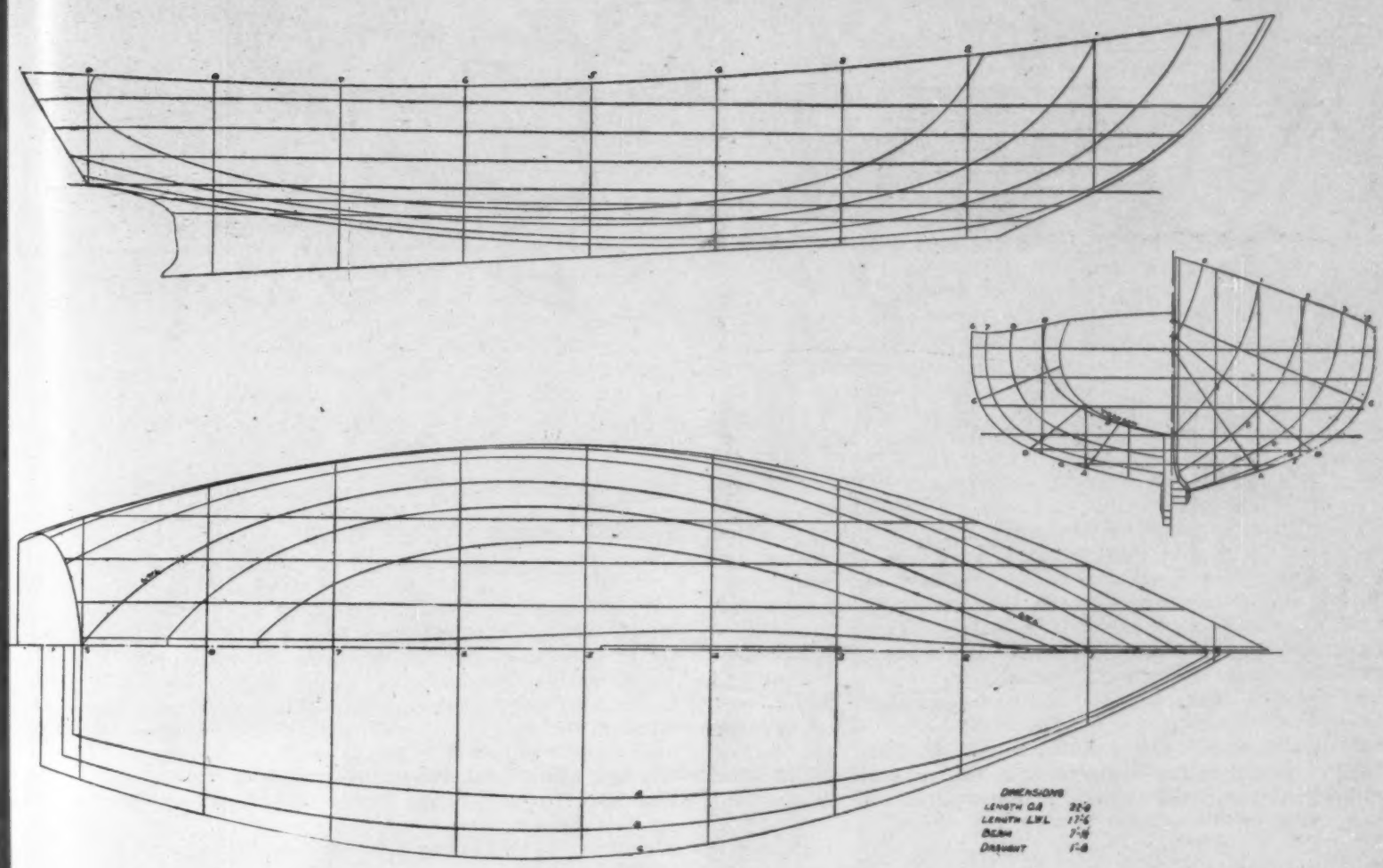
The boat has been given a fairly long overhang forward with a slightly rounded stem and considerable sheer, so that the outboard profile looks a good deal like a modified dory, though this is as far as the similarity goes. The stern is fairly wide on deck, rounding easily on the lower edges, and rakes aft, followed somewhat the old counter sailboat stern, and giving good bearing aft. The entrance lines are fairly sharp, while the run is clean and sweet, so that the boat should be easily driven under either power or sail. There is considerable deadrise for a boat of her draft (one foot eight inches), and the bilges are easy and high, with the turn coming well out of water, so that she gains stability the further over she is heeled.

There is nothing radical about this boat, but in designing her the best in the existing types of centerboard sailboat and power launch have been followed. She was given sufficient beam to insure stability, and yet she is not so wide as to be tubby or hard to drive in a head sea, the principal dimensions being: Length over all, 22 feet; length waterline, 17 feet 6 inches; beam, 7 feet 1½ inches; draft, without board, 1 foot 8 inches

A good-sized centerboard has been given her, yet without wasting any valuable room in the boat. It is 4 feet long by 3 feet deep at the after end, and this should hold her up well when going to windward. The sail area has been kept moderate, there being 225 square feet in the rig. The boom is 16 feet 3



COMBINATION SAILBOAT-LAUNCH WITH KNOCKABOUT RIG



LINES OF 22-FOOT SAILING LAUNCH

nches long, and the mast 20 feet from truck to step. The mast s stayed with two wire shrouds set up with turnbuckles, so that he whole rig can be unstepped and lifted out of her very easily nd without the aid of a derrick or shears. She can thus be trans-ormed into an out-and-out launch with very little trouble.

The mast is stepped 7 feet aft of the stem head, the boat being lecked over forward of the cabin trunk, which commences at the orward end of the centerboard. The cabin house is 5 feet 6 nches long, and gives about 4 feet of headroom over the floor, o that sleeping transoms could be arranged on either side which ould give headroom while sitting down. The cockpit is 9 feet ong and the seats are so arranged as to accommodate comfortably good-sized party for afternoon sailing. The coaming is car-ied around inside of a 4-inch washboard and extends almost to he stern.

The engine is installed just aft of the cabin trunk, where it will et some protection in bad weather when the spray is flying, and should be covered by a square box hatch with an opening at he forward end for the flywheel.

A single-cylinder engine of 4 horsepower is shown, and the cal-ulations figure a speed of about 8 miles an hour with this outfit, hich is about all one could expect from a boat of this size. A two-ylinder engine might be carried to advantage, but care should be aken to get one that will develop its power at not more than five r six hundred revolutions per minute.

The engine bed is of ample size, and keeps the engine as low s possible, all shafting, gear, etc., being beneath the cockpit floor. his allows the shaft to run at a very slight angle. The propeller orks in an aperture under the horn timber very much as it ould in a regular launch, while a shoe or strut comes out from he under side of the deadwood to hold the heel of the rudder ost, the rudder being of wood and of the sailboat type instead f the small tin pan usually hung over the stern of a power boat. hen used as a launch, the tiller can be unshipped and a small iron tiller or quadrant used in its place, with tiller lines carried forward to a wheel alongside the cockpit coaming. Lockers for stowage are built under the after seat, and can be placed under the side seats if desired.

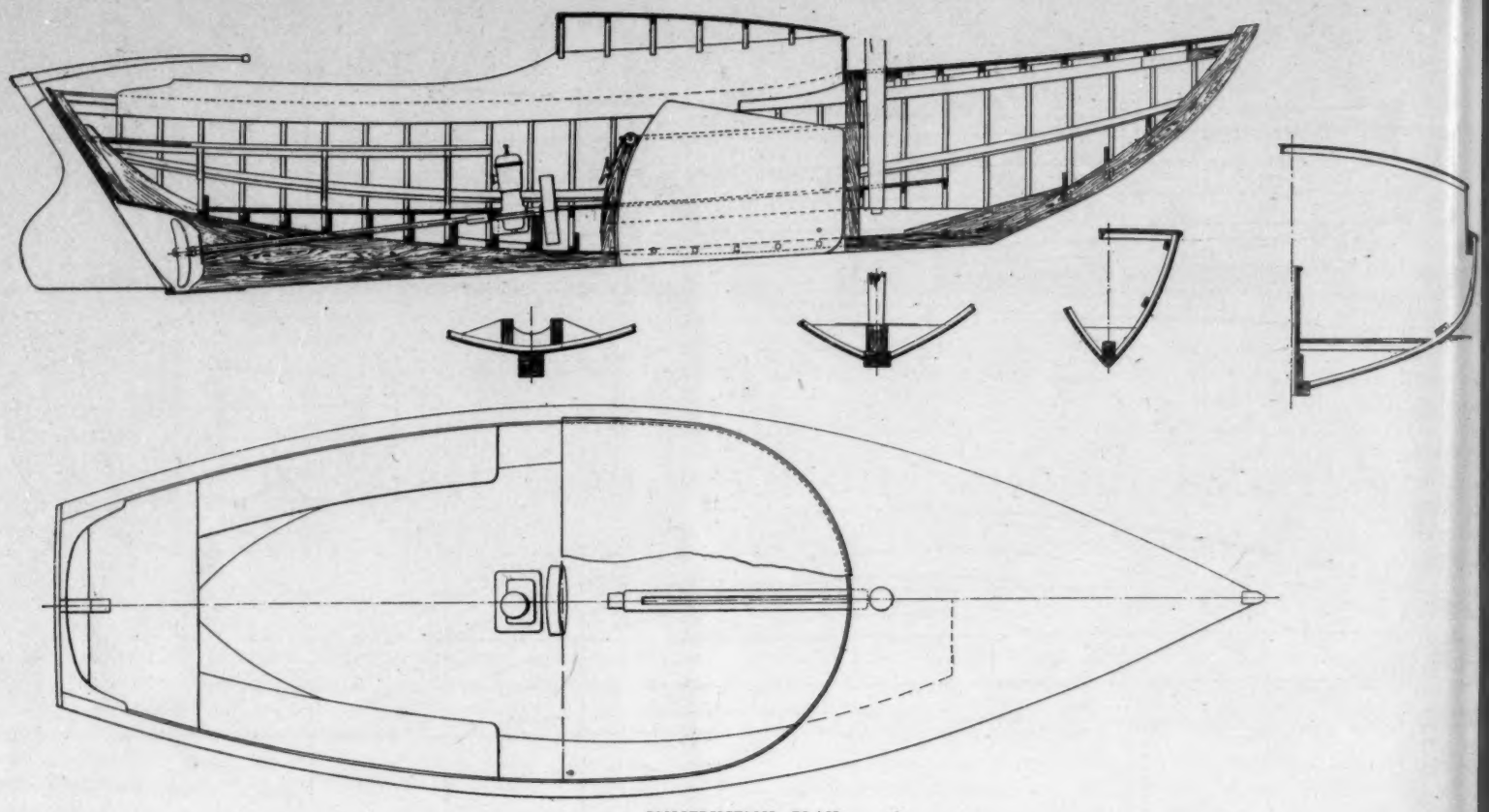
No outside ballast is carried, and inside ballast, in addition to the engine, to the amount of three or four hundred pounds, should be carried, either in the form of iron pigs or stones. With this ballast she should carry her rig very well.

This boat should make an ideal craft for the use for which she is intended, being able and weatherly, and, with her sheer and sharp sections forward, she could be moored in exposed anchorages with safety, where she would be able to ride out almost anything "head-on" without shipping water. She can also be beached, when desired, without damage.

It is hard to make an exact estimate of what such a boat as this can be built for, as prices vary in different localities; but by careful figuring she can be turned out, without engine, for from $275 up, depending on finish and where she is built.

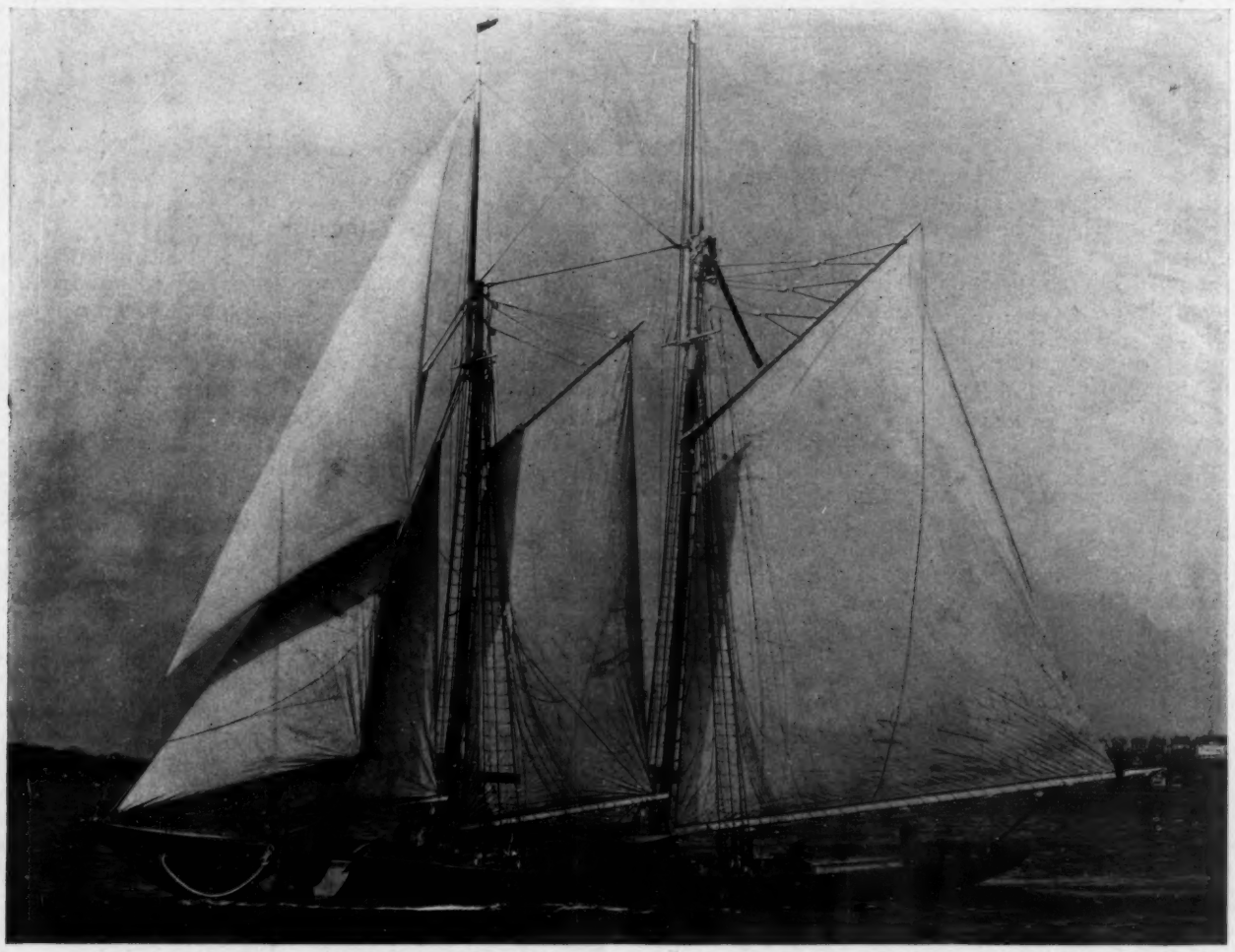
In order that she may be turned out for as moderate a sum as possible the construction has been kept as simple as is consistent with strength. The stem is in one piece, scarphed on to the keel, which is also in one piece, while the sides of the cabin house and combing are of one piece of oak on each side, bent to shape. She is well tied together with clamp and bilge stringers, the latter being seldom seen in power boats of this size. The choice of material may be left to what can be obtained most easily in the various localities, but cedar or pine planking is recommended. The deck can be laid in pine and should be canvas-covered, as is also the roof of the cabin house.

It is extremely difficult to get a cabin house on a boat of this size without making it so large as to be unsightly and spoil the looks of the boat, while, at the same time, it affords very little in the way of accommodations. The designer of this boat has, however, rather added to the appearance by the little cuddy—it is



CONSTRUCTION PLAN

hardly more than that—which is shown in the plans, and which can provide reasonable cruising accommodations for two people if desired. This boat has many points to recommend her, and should be equally good under either sail or power.



ARCAS, ONE OF THE NEW 108-FOOT AUXILIARY FISHING SCHOONERS DESIGNED BY COX & STEVENS FOR FISHING ON THE GULF OF MEXICO. THE PLANS OF THESE BOATS APPEARED IN A RECENT ISSUE OF YACHTING, AND THEY HAVE NOW BEEN DELIVERED AT THEIR HOME PORT

A Plain Talk on the Compass

Part III. Method of Finding the Deviation—Use of the Azimuth Tables—Sight Vane and Shadow Pin Pelorus—Deviation Card

By ALFRED D'A. McNEVIN

AFTER every other important detail of the boat's equipment has been carefully prepared and adjusted for the cruise, we must turn our attention to the last, but not by any means the least, requisite of her outfit.

The compass has been examined and tested for mechanical defects and properly placed so there is no error of the lubber line; also, the binnacle and its compensating apparatus have been carefully overhauled, as told in the previous installments, and everything in this connection is now presumed to be in good and efficient working order. Nothing further can be done, so far as the compass is concerned, alongside the dock or in the basin, so we proceed to a place where there is plenty of room to swing ship, unhampered by passing vessels or obstructions of any kind, to make an adjustment of the instrument and a residual deviation card. The vessel has been properly trimmed, is on an even keel, and is ready for the operation; davits, ventilator cowls, awning stanchions, and all such movable gear are in place.

A suitable place should be selected for this operation where the course can be held on all points of the compass for at least a minute or two. The longer the better, as magnetism acquired on one heading will not vacate an iron ship on another heading the instant a change in the course is made. Let this transient induced magnetism disappear before each observation is made, and also give the compass time to come to rest and "settle down" from whatever cause it may be in motion. Before proceeding to sea at any time it is a good plan to make a complete circle with both helms before departure, in order to shake out any loose magnetism which may have penetrated the ship while lying idle, or in one direction, for any length of time.

In this article the complex question of magnetism in iron and steel ships will not be discussed. That is an unnecessary factor in determining the error of a compass or in compensating its effect. The disturbance may reside in the mast, or in the wire rigging or stays, or in the hull, or in the works of the ship generally; in the stem, or in the stern, or in the sides, according to the direction of her head while building; in vertical or horizontal fittings. We do not know where it is; it's all a speculation; it's there, we know that, and its value is only a simple matter of observation. From whatever cause it may arise we have a well-known remedy at hand by which the resultant effect of these disturbances can be minimized and evenly distributed about the points of the compass, permitting only the smallest uniform amount of residual deviation for the navigator to contend with. The object of an adjustment is merely to bring the compass within manageable limits. It is impossible to remove all of the deviation on all points, no matter how carefully the compass may have been adjusted, and no man can hope for such perfection in his instrument. It is unsafe to do so, as there is no finality about compass adjustment. Consequently, observation should be taken at every opportunity and the results entered in the log book.

What we propose to do here is to treat the compass in as simple a manner as possible, and to describe what is done and what can be done to the fullest extent to counteract these disturbing forces, thus enabling the compass needle in the ship to point as nearly as possible to the North Magnetic Pole of the Earth.

Before adjusting, it is necessary to know the deviation on the different points of the compass. This is found by: 1. The Pelorous, or Dumb Card; 2. Time Azimuths of the Sun, or other celestial bodies; 3. Reciprocal bearings; 4. Range marks.

In using the Pelorus the essential points to know are the Time, Latitude and Sun's Declination. The only one of these three factors where precision is necessary is the Apparent Local Time; this must be correct to the nearest 50 or 60 seconds at the least. In the early forenoon, or as the Sun declines in the afternoon, it is not so important; but during mid-day, when the bearing of the Sun changes rapidly, the time should be correct to get close results with the Pelorus.

The Latitude and the Sun's Declination will answer to the nearest degree, so we will not dwell on that point further in this article. The Declination can be found in any nautical almanac, and everyone knows pretty well in what Latitude he is; if not, all he has to do is to glance at the side margin of his chart.

The Apparent Local Time is commonly called Sun Time ashore, and this has to be calculated for the day on which the observation is made by the application of the difference of Longitude in Time and the Equation of Time to the Mean Standard Time at given Meridian. The Equation of Time and the rule for its application to the Mean Local Time can be found for any day in all nautical almanacs.

In the accompanying table is a short method of the writer for finding the Apparent Time from the Mean Standard Time at any place adjacent to the Eastern Standard Meridian without considering or calculating the Difference of Longitude in Time and the Equation. It is a simple, ready reckoning device for this purpose.

Enter the column *under* the approximate position of the boat, counting *1* for every degree *East* or *West* of the Zero line. Zero signifies the 75th meridian on the Atlantic coast and the 90th meridian on the Great Lakes. *Add* or *subtract* the amount found, opposite the nearest date, in the column coinciding with the position of the boat to the Mean Standard Time, as directed by the rule nearest above said amount. The result will be the Apparent Local Time for the date and place of observation.

SIGHT VANE PELORUS

The Pelorus is an accurately marked compass card without a needle, fitted otherwise like an Azimuth compass with sight vanes; the vane nearest to an observer, when taking a sight, has a vertical slit in it, and the opposite vane carries a vertical thread parallel to this slit. A set screw in the center clamps the vanes firmly to the disk. The numbers are marked from zero to 180 on both sides of the outer edge of the disk or dumb card, to conform to the Sun's bearing as it is given in the Azimuth Tables.

To place the ship's head on any point, set the index mark at the base of the thread vane to the magnetic bearing of the Sun and the course it is desired to steer at the lubber line; clamp both the vanes and the disk, swing the vessel until the Sun is seen through the sights and is covered by the thread, and the ship is then on her course. Any time it is desired to know the course the vessel is making, simply clamp the vanes at the correct magnetic bearing of the Sun and sight the Sun through them; then the point at the ship's head will indicate the course. In observing a star, of course, proceed in the same way; clamp the vanes at the North point. The North Star always bears north for all practical purposes, and you can observe all night without altering the position of the vanes by using the North Star.

SHADOW DIAL PELORUS

The construction of this useful instrument is somewhat different than the Sight Vane Pelorus. The shadow is cast out of the center and the vanes are manipulated from that point, which necessitates a reversal of the points of the compass on the disk. All the West points are to the right of North, and all the East points are to the left of North; no consideration, however, has to be given this feature of the machine, as the point where the shadow rests on the face of the instrument is always the course. There is nothing to do but to stand still, with book and pencil handy; as the ship swings slowly, or is steadied on any course, note the reading of the shadow at whatever moment has been selected beforehand for making the observation. Swinging the ship in a complete circle, using this instrument and steadying her on every point, should not occupy more than an hour.

To find the magnetic course:

1. Clamp the South point of the inner dial, according to the variation for the locality of the ship, to the right or left of zero in the direction the variation arrow points.

2. Set zero at the ship's head. Turn the disk in the direction the A. M. or P. M. arrow points, until the number corresponding to the true bearing of the sun is opposite the lubber line on the box and clamp it there. The shadow of the center pin will then indicate the correct magnetic course the ship is making simultaneously with the apparent local time at which the watch was previously set. By this same process, to shape a course, port or starboard the wheel until the shadow falls on any particular point it is desired to steer. The figures on the outer circle will show the true course in degrees.

3. To find the name of the true course: Set South at zero and clamp it there, paying no attention to the variation. Then set zero at the ship's head as before, turn the disk around until the true bearing of the sun coincides with the lubber line on the box, then the point where the shadow falls will be the true course to which the variation must be applied if the magnetic course is desired.

When the sun is dull and will not cast a shadow place the arrow vane in the socket in the center of the instrument instead of placing the pin there; observe the sun through the sights, placing the slitted vane nearest the eye, and the short pointer will now indicate the course on the Pelorous disk.

4. To find the magnetic course by the pole star: Allow for the variation as before. Set South at zero and zero at the lubber line, or the ship's head, and clamp it there; observe the star through the sights with the slitted vane nearest to the eye, and then the short pointer will indicate the course on the disk.

To set a course leave the card clamped as before and also clamp the vanes at the point it is desired to steer, then port or starboard the wheel until the star comes in line with the thread, at which time the vessel will be heading on the point at which the vanes are clamped.

If the true course is required by an observation of the star, employ the same method as in taking an observation of the sun, only make no allowance in this case for the variation. This is a fixed rule in making an observation of any object according as the magnetic or true course is required.

5. To determine a fore and aft line on the deck for the Pelorus: Set South at zero, and zero and the sight vanes at the ship's head. Glance through the sights at any straight line running fore and aft along the deck; now, when the box is parallel to the keel of the boat, as the line of the deck is, an observed line of vision extended through the sights will coincide with the deck line and the Pelorus is in position where it can be fixed, or its location marked for future use. The same method can be used for setting the compass binnacle in place by setting the Pelorus on top of the binnacle. This will detect any displacement of the compass.

To be sure that the shadow pin is not bent: To test it set it in position in its socket, note the point where the shadow falls on the disk, then slew the pin a half turn; if the shadow falls in the same place the pin is straight. From the motion of the bowl and the card not being coincident the shadow of the pin on the latter does not cover such a wide range as does the shadow of the sight vanes, and therefore the pin is preferable to the vanes when working in a seaway.

DATE.	2 Sub.	1 Sub.	0 Sub.	1 Add	2 Add	3 Add	4 Add	5 Add	6 Add	7 Add	8 Add	9 Add	10 Add	11 Add	12 Add	13 Add	14 Add
MAY 1	5	3	1	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59
7	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
23	5	3	1	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59
JUNE 1	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58
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12	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56
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17	9	7	5	3	1	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55
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26	11	9	7	5	3	1	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53
JULY 1	12	10	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	25	28	30	32	34	36	38	40	42	44	46	48	50	52
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14	14	12	10	8	6	4	2	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
AUG. 8	13	11	9	7	5	3	1	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51
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DEC. 3	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66
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8	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64

TABLE FOR COMPUTING THE APPARENT LOCAL TIME FROM THE MEAN STANDARD TIME WITHOUT CALCULATING THE DIFFERENCE OF LONGITUDE IN TIME OR THE EQUATION OF TIME

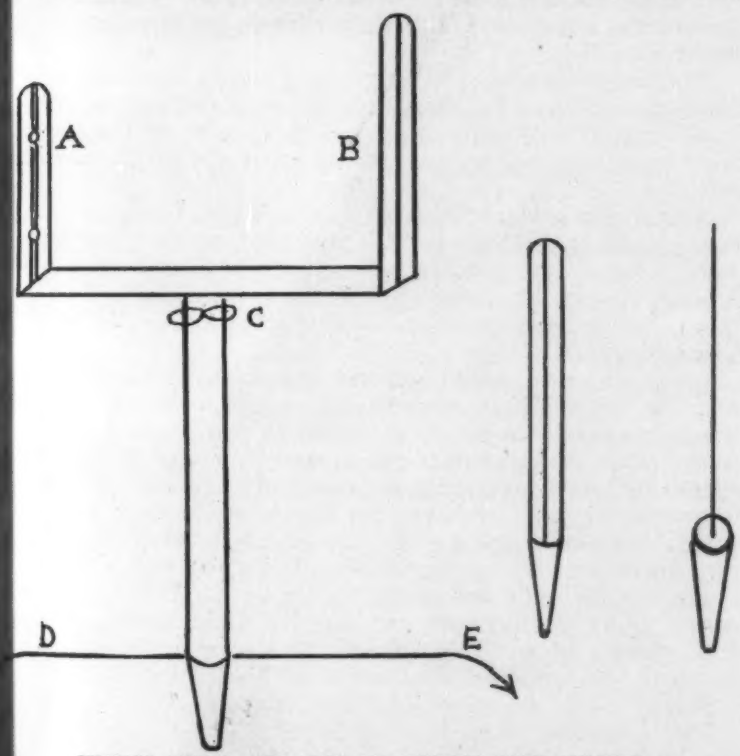
DEVIATION

It must be constantly borne in mind in considering the deviation of the compass that we are dealing strictly with the forces in the ship, and therefore with the angle between the magnetic and compass North. Do not confound deviation with variation. Variation is another thing altogether and is not a disturbance of the compass needle; although for convenience in correcting courses and bearings it is usually applied collectively with the deviation, and their combined effect is called the *error* of the compass. Variation is the angle between the true and magnetic North and is here to stay, unless the magnetic pole should decide to follow Peary in his explorations and go to reside with the true pole; but, although it goes on short periodical jaunts, it is unlikely to travel that far. If it would, then one of the big bugbears of the navigator would disappear.

Regardless of what method may be employed to determine the deviation, the rule for naming it, that is, signifying which way the needle is deflected, is always the same, viz.: When the correct magnetic bearing of an object is to the left of the compass bearing the deviation is Westerly, and when the correct magnetic bearing is to the right the deviation is Easterly.

TIME AZIMUTHS

With the apparent local time at ship, the approximate latitude and the sun's declination, time azimuths (bearings of the sun) can be calculated by using either the American Azimuth Tables



SHADOW VANES AND PINS OF SHADOW VANE PELORUS

A, slitted vane; *B*, wire vane; *C*, set screw to clamp sights in position; *D*, short pointer; *E*, arrow pointer. Always observe through slitted vane. The short pointer indicates the course.

published by the Hydrographic Office or the Davis or Burdwood Tables. The rules for using these tables accompany them, so these need not be discussed here. They give the true bearing of the sun, which must be made magnetic, by applying the variation, East to the left, West to the right. The sun's true bearing is given in the American Tables for every 10 minutes, the other publications usually give it for every four minutes.

To find the apparent local time at ship without the convenience of our Time Reducing Table proceed as follows: Write down the equation of time taken from the Nautical Almanac for the day of the month for mean noon. If the rule at the head of the column says the equation is to be subtracted from mean time, prefix the minus sign; but if to be added, prefix the plus sign.

SIGHT VANE PELORUS FOR DETERMINING DEVIATION

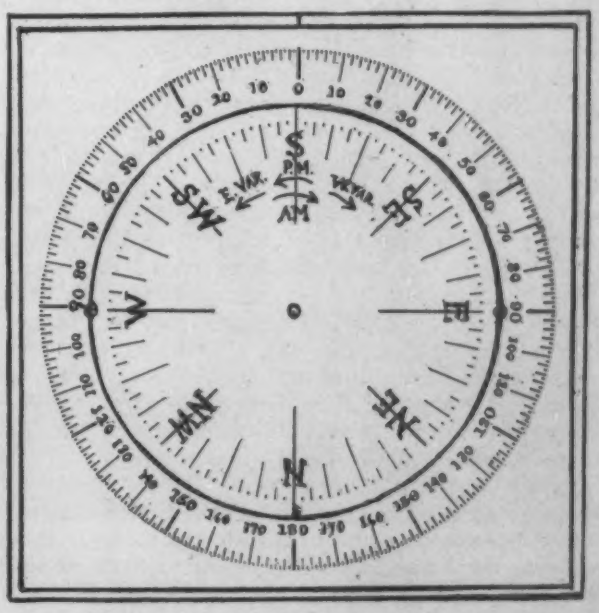
Turn the longitude into time, and if West of the Standard Meridian prefix the minus sign, and if East of the Standard Meridian prefix the plus sign.

If the two quantities (that is, the difference of longitude and equation) should happen to have similar signs, add them together and prefix their common sign; but if the two quantities should happen to have unlike signs, subtract them and give the difference the sign of the greater. This difference will be the amount which, according to its sign, must be added to or subtracted from the mean time to get the apparent local time at ship; or the watch may be set ahead or back according as the sign of the difference is plus or minus in that particular locality of the ship, East or West of the Standard Meridian.

Example, May 1, 1913. Required to know the difference between the apparent local and mean time at ship in longitude 73° West, the mean Eastern standard time being 9h. 50m. A. M.:

Equation of Time,	3m. 00s. +
Difference of Longitude in Time, 2° =	8m. 00s. +
	11m. 00s. +

The plus sign is prefixed to the difference of longitude in time because 73° is East of the 75th meridian from which we are calculating the apparent local time.



CARD OF SHADOW DIAL PELORUS, SHOWING HOW THE MARKINGS OF THE COMPASS POINTS ARE REVERSED

RECIPROCAL BEARINGS

This method is most convenient when a vessel is to be adjusted in a basin or in a confined space. An accurate compass is fixed in a position on a shore, free from any local disturbance, and where it can be easily seen by an observer standing at the compass on the boat.

As the vessel is warped round in a circle, an observer standi by the shore compass and an observer standing by the compa on the boat take a simultaneous bearing of each other at a pr arranged signal, the observer on the ship noting the ship's he at the same instant and recording it. The bearing of the sh

(Continued on page 446.)

Handling a Small Sail

By ADRIAN WILSON

IF the same care were used in handling a small sail as is taken in making it a vast amount of annoyance would be avoided and a great deal more satisfaction obtained by the owner of the boat, while lots of the unnecessary criticism which is frequently heaped on the head of the sail maker would not be heard.

In taking up the consideration of a perfect-fitting sail, and how to keep it in that condition, we may ask ourselves, first, Why do these sails stretch out of shape? The answer is: Simply because they are stretched beyond all reason—unnecessarily stretched—by bad usage. I think it is better, in considering this whole question, that we should understand each other at the beginning. It is a fact that these sails do not stretch naturally, but grow smaller. The material of which they are made is cotton, which is liable to *shrink* when exposed to the weather. From data I have obtained I *know* this to be a fact. Previous to the present time we were taught to make an allowance for stretch in all duck which was used in making sails, and the designer made his plan on the assumption that the material of which the sails were made would stretch naturally; but this is not so now, especially on cross-cut sails. The goods do the opposite—they shrink. No sail has ever gained in *area*. It has stretched on the boom and gaff because it was pulled out.

When I made a new sail for my little Hull one-design class boat last season I made up my mind to keep exact data on this sail myself and note what change took place in it. The sail was made in my sail loft from my own plan, and I saw to every detail of its construction personally and allowed no particular to escape me.

When ready for the season's racing I bent the sail myself, carefully, and saw that it was put on to the spars as it was intended to go. The sail was made up to the full limit of the sail plan, as I wanted to know that I had every inch of area allowed in the class. The plan allowed the sail to be of the following dimensions:

Foot	17′ 3″
Hoist	13′ 6″
Head	11′ 3″
Leach	24′ 6″
Area on straight lines	252.5 sq. ft.
Area on leach to contain	16.5 sq. ft.

When bending the first time I was very careful to note the exact dimensions in every detail. I only pulled it out to 11 feet 2 inches in the head and 17 feet 1 inch on the foot. This left 1 inch short on the head and 2 inches short on the foot. The sail was not laced on the boom and gaff, but at each grommet along the head and foot a short stop was tied. I had to go along the boom and gaff and stop each grommet with cotton braided line about 6 inches long. The luff was attached by trim sail fasteners, and it was only a minute's work to bend the luff. I was very careful in setting it at first to see that I did not stretch it on the luff beyond the measurement of the sail plan, which was 13 feet 6 inches. I had a tape fastened under the jaws of the gaff, and the luff is hoisted to 13 feet 6 inches only. The luff is a very important matter in all sails, and should be carefully watched.

The sail was put on the boat every Saturday afternoon and taken off as soon as the race was finished. We sailed sixteen races during the summer and won fourteen prizes. In each case this work was done on the windward leg of the course. This is only written to show how much the proper handling of the sail has to do with the success of the boat. As I have said many, many times, the bending and care of a sail enter as much into the success of it as the making. No matter how much care is used in making a sail it is all lost if the sail is not properly handle

The great success we had with this sail and the work it did to a large extent, due to the very careful treatment it was give If it had been stretched on the head and foot—which is the pe fectly natural instinct of men who do not understand the bus ness—it would have been ruined and would not have accomplish what it did. This willful stretching is what causes a great de of the trouble that yachtsmen have with sails. If an owner wou take this advice and guard against stretching, better and mo satisfactory results, as a rule, would be obtained from the use the sails.

It is my custom in sending out a sail from the shop to atta a tag to each sail. On this tag are the bending directions, and these directions are only followed to the letter the sail will co out as perfect as we intended that it should. We try to make very clear that the most important point in the whole thing f the users to remember is that these sails do not stretch from *na ural causes.*

The foregoing applies to any sail, no matter how large or h small it may be. If it is a large sail, use the same method handling it as with a smaller one. Have a lanyard at the he and foot, take it out to the mark on boom and gaff, and make fast.

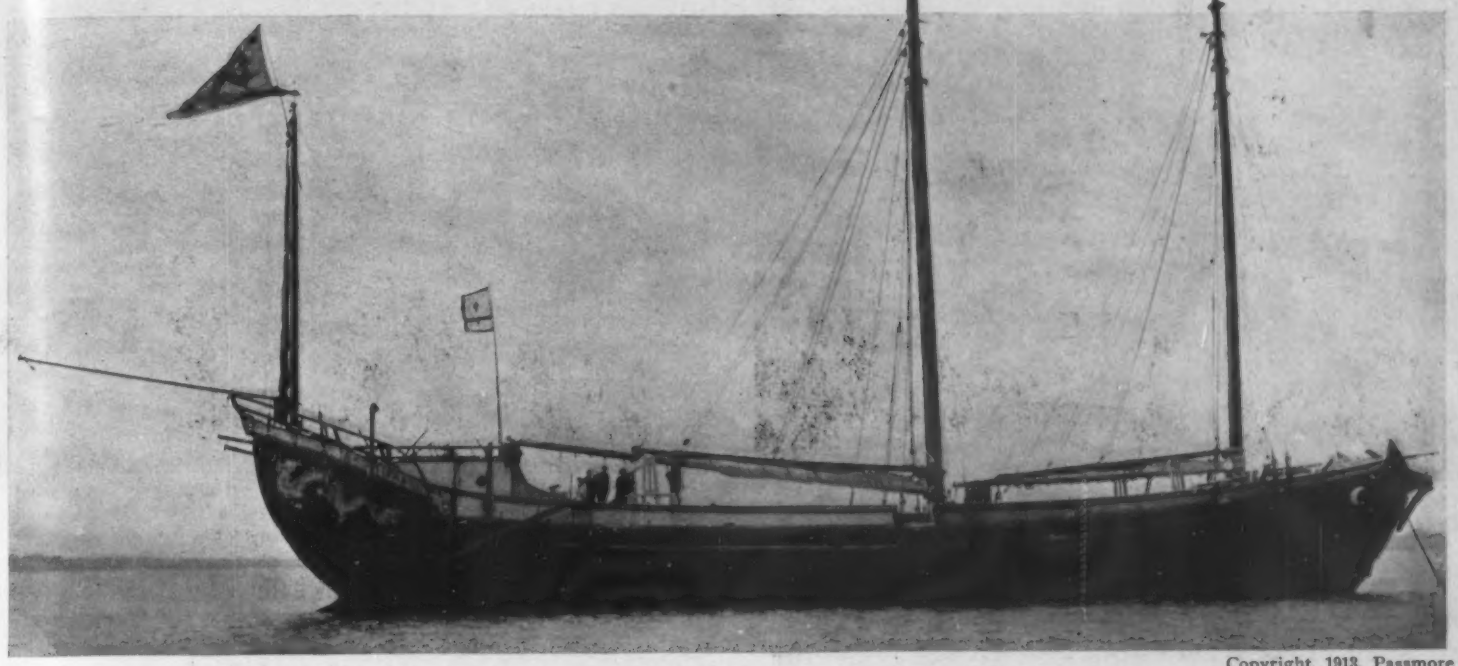
Now, the important thing is to slack it up as soon as you a through sailing. Do not leave it until the next day, but slack the lanyard at head and foot just as soon as you get your anch down. Wet or dry, come up with the lanyard on the head a foot; slack it up completely, relieving all strain on the head a foot ropes.

Also, great care should be taken in making up and furling t sail. Do not roll it up so as to make a nice, neat furl; but pl it back and forth on top of the boom so that it will lay in loo folds. Pass the stops over and around boom and gaff. Do n put the sail stop between the foot rope and boom, but put it arou the whole thing. Then when the stop is pulled tight it does n bring the strain on any one part, but equally on all parts. This very important. Do not neglect it. If the yachtsman will put in practice, he will soon learn the value of it. If the sail stop passed under the foot rope and over boom and then up over t gaff, when it is pulled tight it puts an undue strain on the fo rope and, consequently, stretches it. This is one way that sa are stretched on the foot, and it can be avoided.

The sail covers should be made large and loose enough to co the sail, even when it is not furled snug. In fact, it is a decid advantage not to furl a sail snug. Very often when a boat is n provided with covers, if the sail is rolled in so as to make a n neat furl the dew or dampness which comes into the air after fo o'clock in the afternoon strikes the sail on the exposed surfa and the next time the sail is hoisted wrinkles show along t head and foot. This can be completely avoided if the sail is pr erly furled. No jibs ever show wrinkles on the head or foot a mainsail does, for the simple reason that they cannot be furled the same way and have to be rolled up loosely.

These are some of the little but important things that go so towards making the perfect sail. They rest with the yachtsm and not with the sailmaker. The sailmaker cannot go on boa a boat to furl and take care of a sail, and he has got to depend the yachtsman to see to these matters himself. It is in such w as these that the success, the good appearance and the last qualities of a sail depend; and so, given a good sail in the beg ning, it is up to you, Mr. Yachtsman, to keep it so.

The Chinese Junk, Ning Po, Slaver and Smuggler



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THE CHINESE JUNK, NING PO, THOUGH 160 YEARS OLD, WAS SAILED ACROSS THE PACIFIC LAST WINTER

By FORREST CLARK

THE people of the Pacific seaboard have been astonished to see in their ports this spring an ancient Chinese pirate junk called the Ning Po, which came to them as if out of ne Stevensonian tale of the days when certain bold men in rch of fortune sailed the seas under a flag resembling the label a carbolic acid bottle. Her name means "peaceful wave," but record is as red as the paint on her decks. What an appella- n for a privateer! Pursued by men-of-war of all nations, she ays outdistanced them in the old days. Wild times were had her high decks with as blood-thirsty a mob of Chinese bucca- rs as ever beheaded a captive while singing, perhaps, some inese version of "Sixteen men on a dead man's chest." But at last the British and Chinese governments put an end to romantic career of this pirate craft, and now the Ning Po is peaceful as her name—a ship valuable only as a historic curiosity. But a person with imagination can see romance in all her antiquated lines, from the flat, raking bow to the high-arched stern, and from truck to barnacle-covered bottom. She is 160 years old, the seemingly authentic records having it that she was built in 1753, in the days when piracy and smuggling were honorable callings. Her owners claim that she is the oldest ship that sails the seas to-day.

This curious old windjammer was successfully navigated across the Pacific Ocean, which is regarded by sailors as quite an exhibition of seamanship. Leaving Shanghai on September 5, 1912, she made three unsuccessful attempts to put to sea, but on each occasion was driven back to the Asiatic coast by bad weather in the China Sea. However, she finally got a fair and steady wind and, after a voyage of fifty-one days, arrived at San Pedro, Cal., on the 19th of February, 1913, having sailed over 7,100 miles

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HE BOW, SHOWING ONE OF THE EYES PAINTED ON ALL CHINESE VESSELS. THE PROJECTION AT THE LEFT IS PART OF THE OLD WOODEN ANCHOR

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BOW VIEW, TAKEN HEAD ON, SHOWING HOW THE SIDES DO NOT MEET FORWARD

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THE HIGH CARVED AND DECORATED STERN. NOTE OPENING FOR RUDDER POST

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LOOKING FORWARD FROM THE POOP DECK. IN THE FOREGROUND ARE TWO PRIMITIVE CANON

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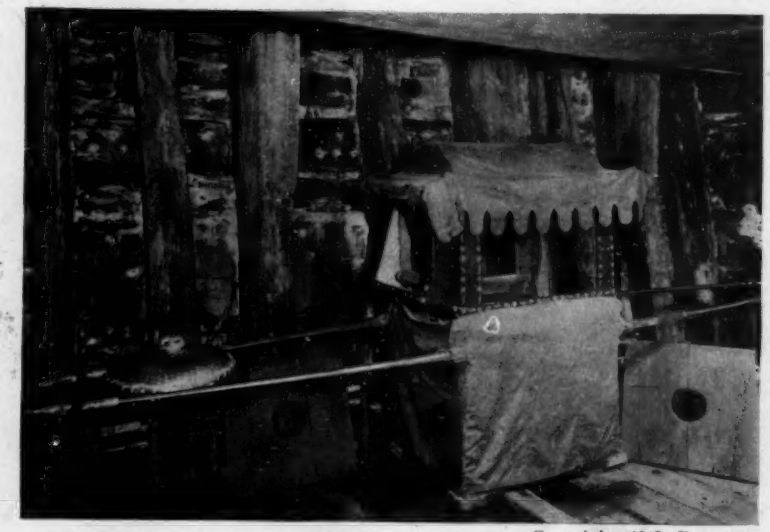
THE MAIN DECK LOOKING AFT. THE MAIN MAST IS SUPPOSED TO BE ONE O THE ORIGINAL STICKS

on her irregular course. During a heavy gale on the passage a huge wave washed two men off the high poop deck and deposited them in a watery grave and carried away the light mizzenmast. With these exceptions, the passage was made without serious mishap.

The history of this ship is replete with acts of piracy, slave-trading, smuggling and rebellion. She was the bane of the British East India Company. Built in 1753 as a Chinese merchant ship and named Kin Tai Foong, this craft became a smuggler and was known as the fastest outlaw in the China Sea. From smuggling opium and carrying slave girls to Macao and Canton she quickly turned to piracy on the high seas, preying upon coasting junks and other defenceless craft, or attacking and pillaging unprotected villages on the banks of the great rivers of China.

The junk is 158 feet in length, 37 feet beam, and draws 8 feet of water. She has three masts of ironwood. This wood is about as heavy as lead and as hard as steel, and the same fore and main masts have done duty in this vessel since the year of her birth. However, the original mat sails have given way to cotton duck and hemp rigging, placed on her by her present owners. The long, double, open bows have great eyes carved and painted on each side, for the Chinese believe that a ship which has no eyes cannot see, and, therefore, could not sail on a course. As a result of this belief all Chinese vessels, both great and small, have a monster eye on each bow. The two sides do not come together forward in a stem piece, but flare away from each other, the bow being a V-shaped flat piece, which is seen in one of the photographs, and which must have stopped her badly in a head sea. The extremely high stern is beautifully carved and decorated in brilliant colors, and here is hung an immense rudder of a style peculiar to old Chinese junks. This rudder extends 7 feet below the bottom of the ship; but in shallow water it may be hauled up by means of a windlass until its lower edge is flush with the bottom of the vessel, after the manner of a centerboard.



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IN THE HOLD, SHOWING THE TIMBERS AND PLANKING. THESE ARE OF DIFFERENT SIZE AND THE PLANKING IS CALKED WITH CEMENT

The frame and planking are of camphor wood, which, after all these years of strenuous use, still retains its fragrance. A curious feature of the construction is that no two pieces of this wood are of the same size or shape, and they are fitted together like the patches in an old-fashioned "crazy" quilt, with wooden pins for fastenings. Amidships, the planking is 22 inches thick and all the seams are calked with a white cement instead of oakum. If one ventures down into the dark and musty compartments of the hold he will discover innumerable lockers and bunks cleverly hidden away behind panels and under trap doors where opium and slave girls were concealed in "the good old days."

On the fo'castle head lies a clumsy wooden anchor, the stock of which is about 20 feet in length. To this is attached a cable made of twisted bamboo. The chaining gear is made from cocoanut fibre. Scattered about the deck are a number of antique and primitive guns, deeply rusted and mounted on tripods. A shot from such a weapon would be harmless beyond a stone's throw.

The predominating color on the Ning Po is red, which signifies war, and is also considered a protection from evil spirits. Yellow is the emblem of royalty or officialdom, and not the least speck of it is found on a privateer.

The Ning Po will remain up on the Pacific Coast until the opening of the Panama-Pacific Exposition at San Francisco.

Cruising in an Open Boat

A Few Suggestions Regarding Shelter, Sleeping and Cooking

By GERALD T. WHITE

DID you ever stop to think that the owner of a cabin boat is carrying around a lot of cabin that he only needs occasionally? The average boat owner uses his boat for Saturday afternoon, Sunday and holiday sailing. Perhaps he goes away in her during his week or two of vacation. The other eighteen weeks of the season he uses the cabin simply as a shelter for his guests in case of a sudden storm. This, of course, does not apply to the man who is so located that he has to use his boat in rough or open water. Then one has to have a boat of the semi-enclosed type to keep from swamping.

Often the owner of a cabin boat is simply using up power and cutting down his speed by wind resistance, and he is only getting seating space in a small cockpit, for no one wants to sit inside the cabin of a small cruiser unless weather conditions make it obligatory. If someone would invent a cabin house that would be tight and strong, and at the same time capable of being removed in a few minutes, he would be a benefactor to boating men. As yet no one has done quite this, but I am going to try to point out several ways of providing shelter on open boats so that one can cruise in comparative comfort on any boat larger than a "dink."

The size of the boat, of course, depends upon the waters in which you do your cruising, and also upon the size of your crew. Three men is plenty for an open boat party. Though it cannot, perhaps, be recommended, the trip taken by some friends of mine from New York to Boston in an 18-foot, open sailing dory without a particle of decking shows what can be done in small open boats. Neither one of the crew had had much salt water experience, either.

The first requisite of a cruising boat is, of course, a shelter for the crew. This shelter must be perfectly waterproof, light enough not to make the boat topheavy and strong enough so that it won't go overboard in a blow. In addition, it should be so arranged that it can be easily taken down and stowed away.

The only thing at present on the open market that fulfills these requirements is a spray hood. These hoods can be obtained in any length, and can be equipped with what is called an apron so that the entire boat can be enclosed in very bad weather. The watermelon type of hood is, in my opinion, better for a cruising open boat than the sliding type, as the sides can be lifted, allowing a current of air to sweep under the hood and still give enough protection for anything but very rainy weather. When the hood is fastened down tight on the sides nothing short of a gale can blow it away.

In the case of a small sailboat the spray hood cannot be used unless the boom is topped up considerably, and even then there is frequently not enough clearance. This makes a home-made shelter for sailing craft imperative.

Probably the easiest made and the simplest canvas shelter for a sailboat is a tent thrown over the lowered gaff and boom. By means of buttons on the outside of the coaming the tent can be fastened down so that when you take up on the throat and peak halyards the canvas is stretched drum-tight. By lashing two light poles across the boom the canvas can be made to serve as an awning for hot days in port.

Really the best shelter on any boat having a cockpit not over 12 feet long is obtained by overturning your "dink" on top of the cockpit and using it as a cabin house. To do this successfully it is usually necessary to build a dinghy especially to fit your boat, as the usual 10 or 12-foot one has too much sheer. A very good type of boat for this work is the square-ended punt known as a "Wee Pup." This tender is easy to build, light to handle, has fair carrying capacity, and is quite as seaworthy as any other style of boat *of its length.*

Take the measurements of your cockpit and build a Wee Pup out of ½-inch cedar, so that it will fit over the outside of the coaming when overturned. Don't put too much sheer on the boat, or else you will find that there is a large space between the top of the coaming and the bottom of the gunwale of the overturned boat at the center. A small opening won't matter, as you can arrange a piece of canvas to drop down over this and form a sort of window on each side.

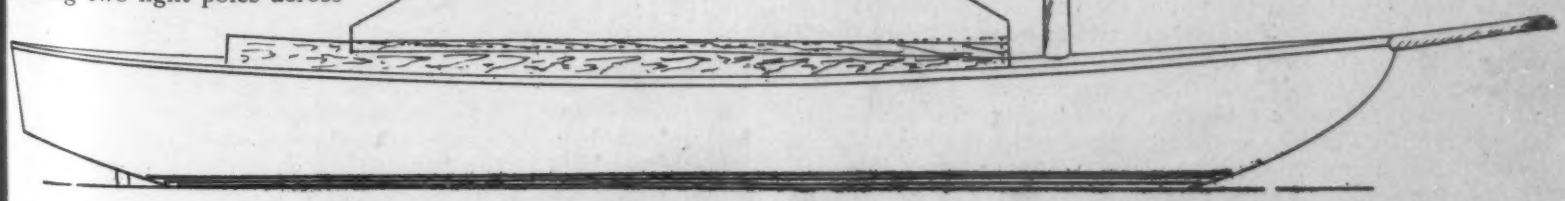
Build the tender so that it is about 12 or 14 inches deep amidships, and you will be able to sit upright in your "cabin." If you wish more ventilation, you can arrange two blocks on the after deck to raise the dink so as to give a chance for air to circulate. You will now have all the air you want and still be protected, as the boat will float head to the rain and wind. Put several heavy screw eyes in the sides of the tender so that you can lash it down tight after you have crawled in for the night. Otherwise it is liable to blow off and leave you "without a roof over your head." Be sure, however, to have the lashings so that they can be cast off instantly in case anything should happen to the boat in the night, making it necessary for you to get out quickly.

The next thing of importance after you have something to sleep under is something to sleep on. It is all very well for you to sit in a nice, comfortable chair in a warm room on a winter evening and say, "Oh, I don't want any bed when I am cruising. I like to throw my blanket on the floor and sleep on it." But when the time comes for you to try this you'll sigh for a real bed with all the "fixin's." I tried that Robinson Crusoe stunt once.

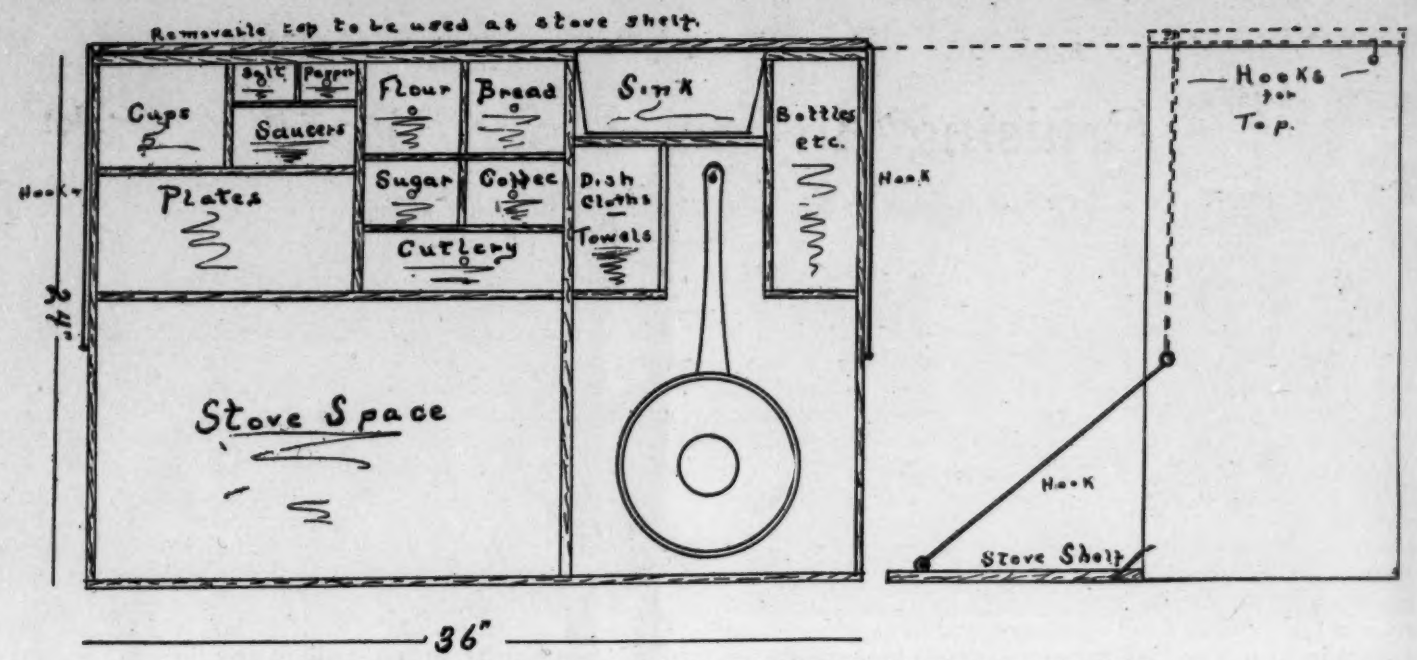
If your boat is big enough there is nothing better than the folding cots that are sold in sporting goods stores. Get one with as little iron as possible about it to rust, and paint that. An air mattress laid on the floor is about as comfortable a bed as can be had, but the price of the mattress is enough to deter many of us.

If your boat has seats around the edge of the cockpit, it is easy to make a folding shelf that will drop down out of the way during the day, and can be lifted up at night to form a berth. Unless you have cushions that can be extended over the shelf this method is little better than sleeping on the floor, except that it is a bit farther away from the bilge with its attendant dampness and smell. Another disadvantage is that the sleepers are not so well protected by the sides of the hull.

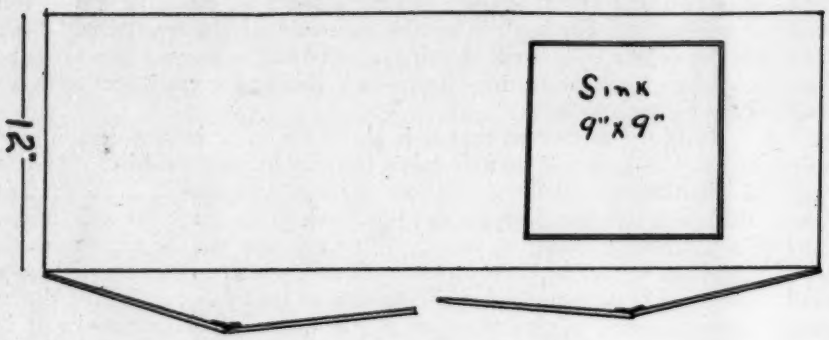
If your boat is a sailboat with a cen-



A DINGHY OF THE "WEE PUP" TYPE INVERTED OVER THE COCKPIT OF AN OPEN BOAT TO FORM A CABIN



FRONT AND END ELEVATION AND DIMENSIONS OF A PORTABLE GALLEY FOR AN OPEN BOAT



TOP VIEW OF PORTABLE GALLEY

terboard trunk at least six feet long, a line of hooks can be put in the side of the trunk and along the side of the boat and canvas stretched between these. It is sometimes advisable to build either a temporary or permanent extension on the trunk so that you will be able to make your bunks in this way.

The next thing is the grub. Sardines and Uneeda Biscuit are fine for the first meal, but after that you will want to sit down to a real meal, cooked on a real stove and served on a real plate. That is, you will unless you are a health food "faddist," who can get along on a handful of peanuts, an apple and a glass of water to a meal.

The best thing for the cook that I have found is a portable galley such as is shown in the accompanying drawing. To build a cook box like this is a simple matter. The material for the box should be about ¾ inch thick and preferably oak. The drawers and partitions for stove, etc., can be made from ½-inch pine or oak. All fastenings should be of brass, and the corners of the box should be protected with heavy brass corner pieces. A couple of heavy handles can be fitted on the sides. An iron sink of the size shown can be purchased from any marine plumber, or you can use a dishpan and make the opening round instead of square. In either case do not fasten the sink in, as it must be removed for emptying.

When the stove is in use it should be pulled out onto the shelf that is formed by taking the top of the box off and hooking it to the bottom, as shown. The doors should be hung so that they will swing inside of the shelf when it is in use, and they should be made with a double fold so that they can be used as a wind shield for the stove. If you use cooking utensils with removable handles, you can put a bottom on the space into which the handle of the frying pan is shown projecting and use this space for other stores. The box provides space for everything necessary in the culinary department except canned goods and butter. As the former can be stowed anywhere and the latter should be kept on ice, the box is very near being a complete galley in six cubic feet.

Either an alcohol or a blue flame kerosene stove can be used, although I prefer the former for work where the stove is not entirely protected from wind. Don't in any case use the old-fashioned kerosene stove with a wick, for it does not give heat enough.

Now as to stowage. This seems so simple a matter that one is tempted to turn the page and read of the latest spectacular doings of the A. P. B. A. But ask any mate of a coasting vessel what his hardest work is and, ten to one, he will answer, "Stowing cargo."

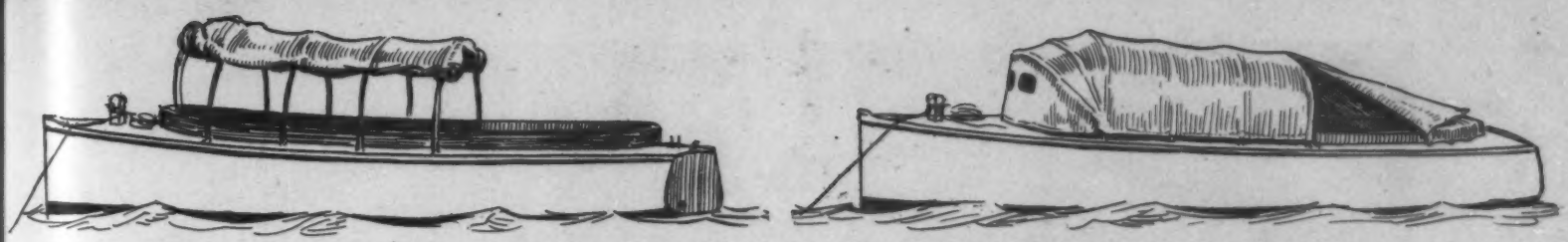
If you happen to have one of these boats that have lockers all around the cockpit, the work will be easy. All one has to do is to apportion each locker as the receptacle for some one line of stores. If your boat has only the space under the two end decks your work will be harder, and you will need some sort of receptacle to hold the various stores and keep them dry. The best thing for this purpose is the duffle bags sold in sporting goods stores. They are watertight and very strong, and while they are not shaped as well for stowing as might be wished, they are better than a box. Keep a list of everything you put in each bag and number the bag. This saves hunting through every bag when you want a spool of thread or the sticking plaster.

In stowing away small stuff like sewing materials, matches, medicines, etc., there are nothing better than the small tin boxes that tobacco comes in. If you are going to take along a kodak you will need the boxes to pack the films in both before and after exposure.

If you only have one locker on board, reserve that for the food stuffs, and stow the clothing and other things into the bags. Leave suit cases home, as they are a snare and a delusion on board a small boat. They are far from being waterproof, and when they once get wet with salt water they are unfit for use again, as you cannot get the stain off. Furthermore, two suit cases take up more room than one man and they are constantly getting under foot.

Use a little head work when you are stowing the grub, and remember that the stuff will get a lot of shaking up in a seaway and that covers are apt to come off unless fastened on. Keep your oil and gasolene as far away from the food as possible. If your gas tank is in a locker try and get the oil and the greasy tools in that locker also. If you can find room, stow away a can of paint and a couple of brushes, so you can touch the outside of the hull up once in a while and look shipshape when you come into a strange port. The way some men will go around with a dirty boat all summer is scandalous.

Don't ever turn in for the night without putting up an anchor



A SPRAY HOOD WITH AN APRON MAKES A GOOD AWNING AND A SNUG SHELTER WHEN FASTENED DOWN

light. It makes no difference whether your boat is 16 feet long or 60. The smaller it is the less liable is the skipper of some other boat to see you on a thick night.

Even in a small boat charts are usually a necessity when a man is cruising, and in order to keep them in good condition and have them ready for use in a moment's time it is necessary to have some sort of chart box. These boxes, made of tin to hold a roll of a dozen or more charts, can be had from most dealers in marine supplies, and will keep the charts dry in rough or rainy weather.

It probably will be unnecessary to tell you not to start without a compass, but I met a party of two men in an open boat three miles outside of Fire Island Inlet last summer in a "pea soup" fog. They had left Coney Island that morning to go to Sandy Hook. They were 40 miles off their course, and their next stop would have been France if we had not picked them up. Of course, they had no compass. A small liquid compass can be bought for less than $5; and while not a very pretentious instrument, it will do quite well for short cruises. Keep it away from the engine, anchors or other ironwork if you want to rely on it.

If you have a little extra room it is wise to take along a tent. In this way you can sometimes vary the monotony of sleeping aboard in cramped quarters. When it has been rough all day and the indications are for a wet night, it is mighty comfortable to set the tent up on shore and turn in to a bed that is standing still and not sliding all over the place.

A word as to clothing. Take all the old sweaters and coats you can find and plenty of woolen underwear. The latter adds to the comfort in sleeping in the open, as frost is sometimes seen in August just before sunrise. Each man should have a complete suit of oilskins, also boots, if possible, though these are hard to stow. Lastly, never forget for one minute that you are cruising in an open boat, and don't try and follow some raised deck self-bailer out of harbor on a bad day because you are ashamed to stay in where it is cosy. The big boat can stand the gaff; you can't.

What Chicago is Planning for this Season

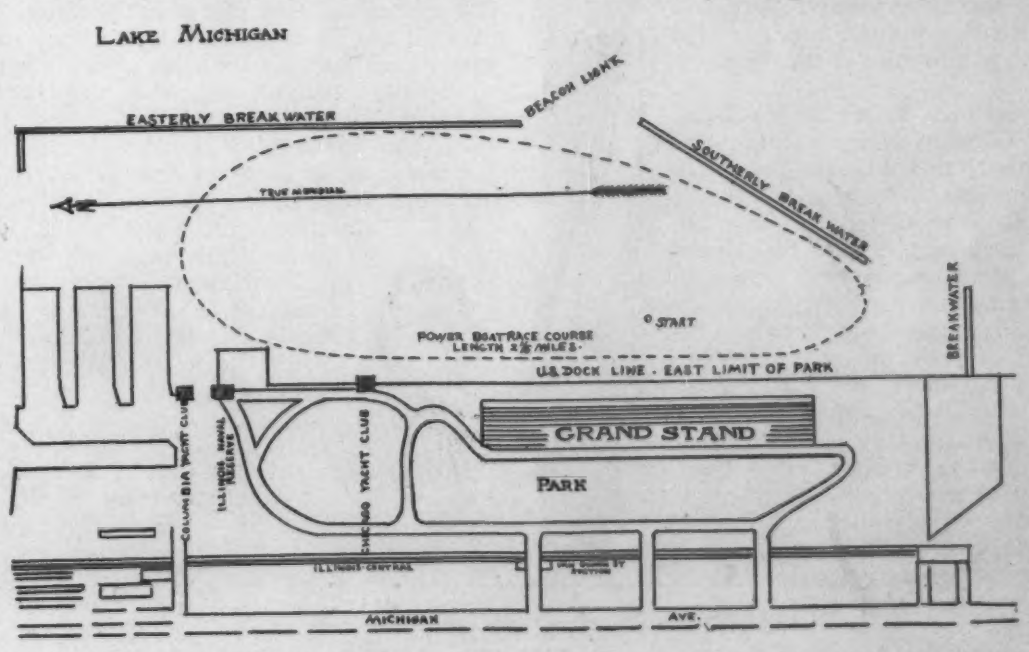
WITH their characteristic energy and push, the Chicago sailors are making plans for the Second Annual Water Carnival and Naval Pageant for the week of August 16 to 23, and expect to make not only this event, but the entire yachting season, the most successful that has ever been held at the head of Lake Michigan. The carnival will be in charge of the Associated Yacht and Power Boat Clubs of America, and Commodores William Hale Thompson and James A. Pugh are working hard to get together the biggest fleet that has ever been gathered on the Great Lakes. The prospects of doing this are bright, as, following the Perry Centennial Celebration at Put-in-Bay, it is probable that many owners who race there will, later, send their boats to Chicago to take part in the later event.

The course this year has been changed from the unsatisfactory one outside to an elliptical one of two and one-fifth miles in length laid out inside the breakwaters, where the entire course is in sight of the grand stand, which will be built in Grant Park instead of on the breakwaters. Some thirty speed boats have already been promised, among them being the following:

Two by Commodore J. Stuart Blackton; the two Kitty-hawks, entered by H. M. Timken; a 30-foot hydroplane, by Carl Fisher; a new 40-footer, owned by Mr. Athern; Commodore Connor's latest Buffalo Courier; J. A. Pugh's Disturber, which has this year been entirely overhauled and altered; two boats from the Weckler Boat Company; a 20-footer, Emerson III; three Mullen's boats; two Elco speed boats; a new boat owned by Earl Daiken, and a number of others. At this carnival the Wrigley trophy will again be raced for, and the prize fund assures even a handsomer lot of prizes than was seen last year.

Instead of confining the racing wholly to speed boats and hydroplanes, classes will be provided for displacement boats, cruisers, open boats, etc., so that everyone who goes to Chicago will be sure to get racing.

In this connection it might be said that Chicago is planning waterfront improvements that should make it one of the foremost yachting cities in the world. With a fine yacht harbor at the westerly end of Grant Park, on which will be located those yacht clubs now facing Chicago harbor, and with some nine or ten miles of protected waterways along the lake front to the South Shore Country Club, if this scheme is carried out it will, within the next five years, give Chicago unusual boating facilities.



INSIDE MOTOR BOAT RACING COURSE AT THE CHICAGO WATER CARNIVAL

MANHASSET CUP

In the first week in September will be held the series of races for the Manhasset Bay Challenge Cup, which was won last year by Michicago, of the Chicago Yacht Club. In addition to the two fine P boats already owned in the Chicago Yacht Club, two new P boats are being built for this event. One is for the South Shore Country Club, to be called South Shore, and the other for a syndicate headed by Com. Heyworth, and named Olympian.

WATERTOWN (THE BLACK BOAT) AND NIRWANA AT THE START OF THE SECOND RACE LAST YEAR FOR THE GEORGE INTERNATIONAL CUP

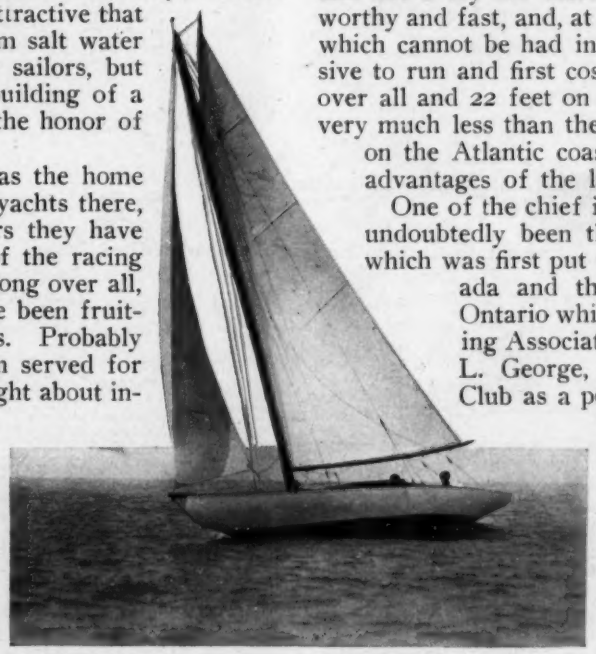
The Class R Boats of the Great Lakes

The Rise of This Popular Class Due Largely to the Fine Qualities of the Boats Themselves. Some Great Racing this Summer at the Perry Centennial Regatta and for the George Cup.

Photos by courtesy of Judge G. W. Reeves, J. S. McMurray and R. E. Power

THE Great Lakes are going to see some great sailing this summer, probably the greatest in the history of the sport—which is saying a whole lot when one recalls the many stirring contests of the past that have taken place on the waters off Chicago, Rochester, Toronto and Put-in-Bay; but the plans made for the present year are so attractive that they will not only bring many boats from salt water to try conclusions with the fresh-water sailors, but they have furnished incentive for the building of a number of new racing boats to defend the honor of the Lakes.

These Lakes have long been known as the home of small-boat sailing. They have large yachts there, of course; but up to the last few years they have been few and far between, and most of the racing has been done with boats under 50 feet long over all, so that the various yachting centers have been fruitful breeding places for small-boat sailors. Probably the best interests of the sport have been served for this very reason, inasmuch as it has brought about international competition in boats of a sensible size instead of the large racing machines which have marked, to a great extent, international competition on the Atlantic seaboard. The Canada's Cup, the Seawanhaka's Cup, later the George Cup, and now the Yacht Racing Union Cup, have all done their share towards promoting the right size of boat, and have furnished the keenest of competition.



PSAMMIAD, 14 YEARS OLD, THE CLASS R CHAMPION OF LAKE ERIE

Of all the classes, however, that have flourished at various times there is probably none in which the boats themselves have proved so satisfactory in every way and which deserves popularity more than the present R class under the Universal Rule. The boats are large enough to be real yachts and not a toy for mere afternoon sailing. They are able, seaworthy and fast, and, at the same time, can offer cruising facilities which cannot be had in a smaller boat, while they are inexpensive to run and first cost is not prohibitive. About 37 feet long over all and 22 feet on the water, they can be built and run for very much less than the class Q boats, which have flourished so on the Atlantic coast, while they have practically all of the advantages of the latter size.

One of the chief incentives for the growth of this class has undoubtedly been the George International Challenge Cup which was first put up in 1907 for competition between Canada and the United States by any club on Lake Ontario which was a member of the Lake Yacht Racing Association. This cup was presented by Mr. Silas L. George, of Watertown, to the Crescent Yacht Club as a perpetual challenge trophy for the 18-foot class. When, however, this Association adopted the Universal Rule, the deed of gift was changed in 1909 to include the R class, or boats which rated over 17 feet and not over 20 feet racing length.

This trophy has been the cause of the building of practically all the Class R boats on Lake Ontario. The first winner was Crescent, of Watertown, and in 1909 it was won by Kathleen, of Kingston, Ontario. In 1910 it

was won by Swamba, a new Owen-design boat, in which "Bill" Jarvis, son of Canada's famous racing skipper, Æmilius Jarvis, made his début as an international skipper. In 1911 Canada again won, with Vivia; while in 1912 Nirwana, owned by one of the Gooderham family, kept it at the western end of the lake for Canada. It has always been challenged for by the Crescent Club, of Watertown, and in the endeavor to win it back several new boats have been built, largely through the efforts of Judge G. W. Reeves, of Watertown, who has sailed the challenging boats. This year the racing will be held at Prinyers Cove, in the Bay of Quinte, probably in the second week of July, when America will be represented by a new boat from designs by Bowes & Mower, named the Neagha. Canada is not building a new boat to defend, but will hold trial races between the winners of 1910, 1911 and 1912 to select the defender, and the choice is likely to fall on Nirwana, last year's winner. A new Class R boat has been built for the Queen City Yacht Club, but it is not likely that she will have any designs on the George Cup.

After this series of races it is likely that the American challenger and three or four of the best Canadian "R" boats will go to Put-in-Bay for the Perry Centennial Regatta, where they will be called upon to meet the best R boats of Lake Erie. The resulting races ought to be the best that have ever been seen off the waters where Perry won his victory a hundred years ago, as the Lake Erie sailors have not been caught napping.

On Lake Erie the R class has been gradually developing, and it has superseded, in a measure, the older 18-foot class, though the latter is still being raced and will this year meet a number of 18-footers from Massachusetts and Narragansett Bays. In 1911 a syndicate in the Lakewood Yacht Club built an "R" boat, called the Lakewood, with the idea of racing her against the Canadian boats of that class. As there were only two R boats in sight on Lake Erie at the time, Mr. A. J. Prentice bought the old raceabout Psammiad, then owned on Long Island Sound, had her taken to Lake Erie and her rig cut down to about 550 feet, so as to make her measure in the class. The boat at that time was some twelve years old, and it was not thought that she had much show against the new boat. However, the changes made in her seemed to suit her to perfection, and in the hands of R. E. Power she had a wonderfully successful season, winning three straight races against Lakewood at Put-in-Bay in 1911, taking a heat for the Inter-Lake Corinthian Trophy, winning the Lakewood Yacht Club Championship in Class R, and the Commodore Gardner Cup.

The following year she was equally successful, and though her old competitor, Lakewood, was not in commission for the better part of the season, she won all her events and, late in the season, on September 7, she won the annual long-distance race of the Toledo Yacht Club under the Universal Rule, beating all but two of the fleet on actual time and saving her allowance against the 21-footer Toledo and the big sloop Elsie by over half an hour, again beating Lakewood in this race. This is certainly a wonderful record for an old boat. However, the Psammiad, as were most of the raceabouts, is somewhat flatter than the Universal Rule boats, and should do well against the latter in smooth water. Probably much of her success is due to her handling and also to a very fine suit of six-ounce Lowell duck sails made by Wilson & Silsby, which seemed just suited to the conditions on Lake Erie.

This year, with the prospect of the visit of the Canadians and of the Watertown boat, Lake Erie sailors felt that they could hardly pin their faith in a boat 14 years old, and a new "R" boat has been ordered by Mr. A. J. Prentice and Mr. Alexander Winton. This boat was designed by Gardner and built by Wood, of City Island, so neither brains nor money have been spared in her design and construction; and while this is Gardner's first class R sloop, he has designed so many successful "Q" and "P" boats that the Lake Erie sailors are very hopeful for their new craft, which will probably be called Psammiad II, in honor of the fleet little raceabout which has heretofore swept everything before her.

It is expected that the new Psammiad will be ready for shipment to Lake Erie by June 1, which will give her crew plenty of time to get properly acquainted with her and get her tuned up. She will be sailed by the old Psammiad's crew, with R. E. Power at the stick, E. R. Andrews on light sails, and James O'Brien at the mainsheet. On the Watertown boat will probably be found Judge Reeves, and, in addition, "Charlie" Mower, her designer; while the Canadians will be handled by the best of the Toronto sailors. The old Psammiad has been purchased by Commodore W. R. Huntington to represent the Put-in-Bay Yacht Club, so that she will also be a contender, and probably a dangerous one, judging by her past record.

It will be seen from the foregoing that the very best of American naval architects are represented in this class on the Lakes, the list including George Owen, Wm. Gardner, Bowes & Mower, Cox & Stevens and J. R. Purden, and the result has been a very high development of these particular boats. Nowhere else in this country has the R class grown as it has on the Lakes, which seems a pity, considering the all-around merits of the boats themselves as compared with some of the other classes that have found favor on the Atlantic seaboard and elsewhere.

With such a fleet of boats it is no wonder that the prospects are bright for some of the best racing ever seen on fresh water.

THREE CANADIAN CLASS R BOATS

VIVIA, WINNER IN 1911 SWAMBA, WINNER 1910 NIRWANA, CHAMPION OF 1912

Building a 24-Foot V-Bottom Open or Cabin Boat

Part II—Some Details of Planking, Finishing, Etc. Building the Cabin.

BY F. R. WATERMAN

IN the last issue we got as far in describing this V-bottom boat as setting up the frame, and in this installment the rest of the plans are published and some hints given on putting on the planking and deck, and finishing generally.

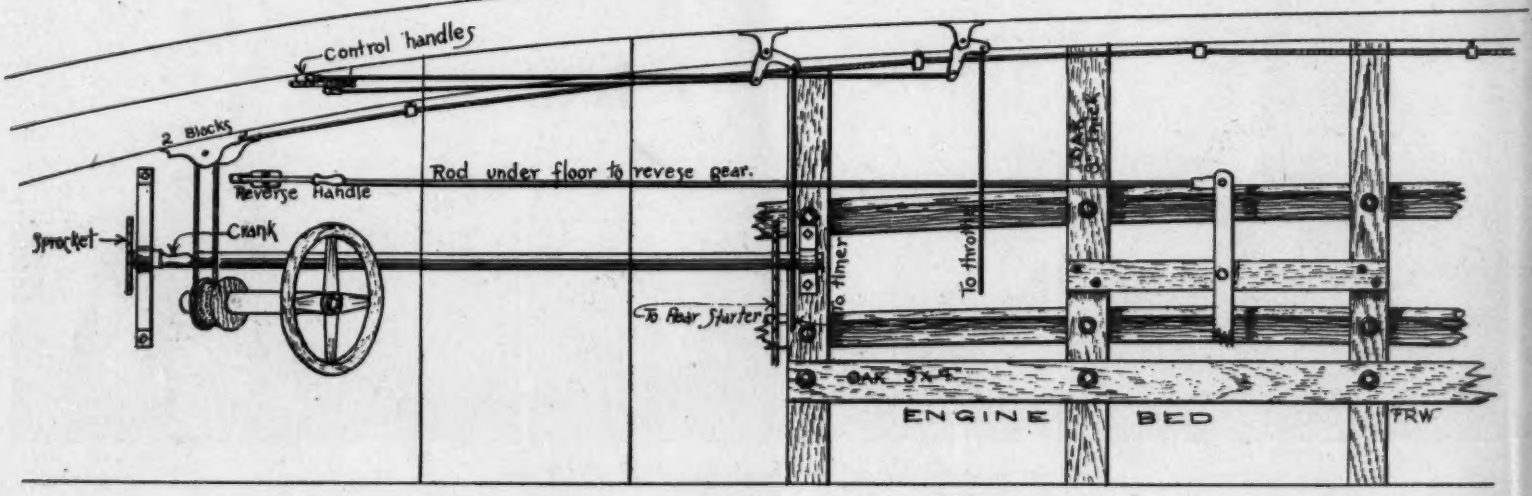
The ribs are spaced 10 inches apart. Their positions can be marked out on the clamp, and with a plumb line corresponding marks can be made on the chine piece for the lower ends, so as to get them in evenly. There are two bilge stringers on each side running the length of the boat between the keel and the chine piece, and notches for these should be cut in the molds, as shown. In boring the shaft hole in the log, it is wise to have a carpenter do the work, as it takes a particularly long and large bitt, and it is cheaper to have the work done than to buy the proper tools yourself. The round chine piece, a detail drawing of which was shown, is somewhat harder to make than the sharp corner, as the chine piece has to be gotten out carefully and a half-round filler piece put in. It would probably tax the abilities of the average amateur builder.

Before putting on the deck beams the stern had better be bored for the rudder post pipe. First make sure that the rudder is hung in such a position as to give plenty of clearance for the propeller. This pipe has a long thread on one end, and this should be screwed into the hole until its lower edge is flush with the outside of the boat. First smear the end of the pipe well to make the fit watertight. The deck beams are of oak, ⅞ inch by 4 inches, with a 2-inch crown, halved and mortised to set flush into the clamp.

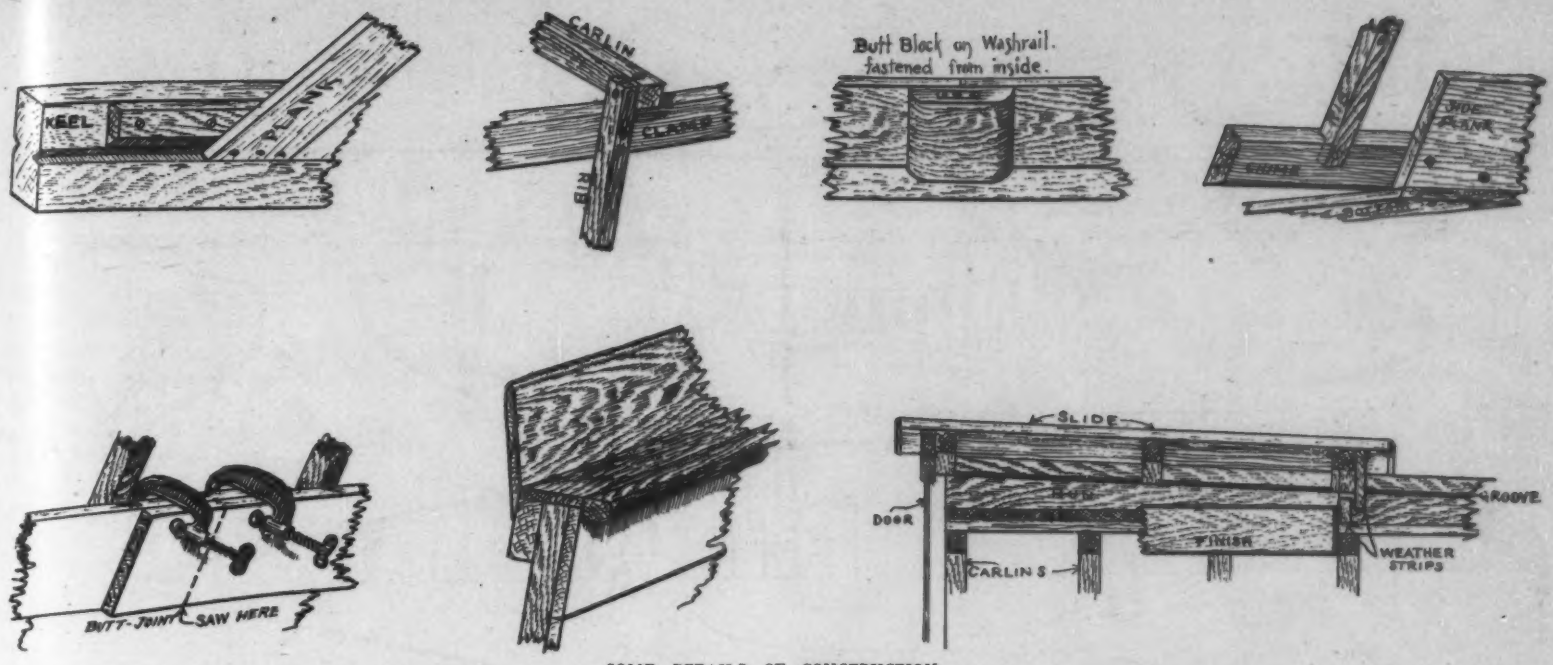
Before beginning to plank the boat sort over your planking and pick out those pieces that are clear and of a uniform width for the sides above the waterline, where the planking goes on lengthwise. The odd widths can be used on the bottom, where the planking is laid crosswise. It will take about four planks to a side for the top planking, and to get these even every frame should be divided into four even spaces between the clamp and bottom of chine. The bilge plank should be of one board, and if you are unable to get this in cedar it can be had without any difficulty in pine. To get the shape of this plank, clamp it in position around the bottom of the side and run a pencil along the bottom edge of the chine. Then, from the inside, mark the upper edge to the height of each of the lower marks you have made on the frames in subdividing them as just mentioned. By tacking a batten along these marks you can easily draw in the top line and then saw and plane exactly to the lines as marked.

With this top planking plane the edges on a slight bevel to allow for calking. Mark the other planks in the same way. To put on the planks some four to six boat builders' clamps will be necessary to hold them in place until fastened.

The bottom planks are short pieces running only from the keel to the chine. They have all straight edges and, with the clamps to take up the twist, are very easy to put on. From a little aft of amidships these bottom planks start to rake forward at a slight angle, so that when they reach the stem they are at approximately the same angle as the stem piece. Begin planking the bottom from a point 5 feet forward of the stern, and when about 8 feet from the bow slide in the two bilge stringers on each side, shown in the plan of midship section. These are not put in before, as they are apt to spring out and spoil the concave section desired. The planking should be of ⅞-inch stuff, preferably cedar. Around the edge of the stern transom, on the inside, fasten a strip of 2 by 3-inch stuff to hold the additional fastenings for the



DETAIL OF ENGINE BED



SOME DETAILS OF CONSTRUCTION

planking at this point, and also to allow all stringers to be mortised into this instead of into the stern board.

At the bow the bilge stringers will have to be pulled into the stem, as the chine pieces were, and the edges will have to be planed somewhat to take out the twist, which you will notice when you come to put on your plank. After this put on the rest of the bottom plank, fore and aft. It is best to make a pattern for the two or three pieces nearest the stem, and they should be soaked in hot water so as to bend easily. Pick out your best stock for these planks and don't be discouraged if two or three are split in putting them on, as there is quite a twist at this point.

You had better fill all nail and screw holes in the planking with half-inch soft pine plugs. Coat these with shellac and drive them gently into the fastening holes, being careful not to crush the wood or to drive them into the bottom of the hole, as in this case they will swell out like rivet heads. Plane off all seams with a sharp plane set fine. When planked and calked the boat should be painted above the water with at least four coats of white lead. If you have never done any calking before, you had better hire some one to do it or else go to a boat yard and watch how the job is done before trying it yourself, as it is very easy to make a botch of this part of the work.

The wash rail should be of oak, 5/8 inch by 12 inches wide, and about 23 feet long, the exact measurements being gotten from the boat. This wash board is in three pieces, the forward one starting from the center on one side, running around the forward end of the cockpit and to the center on the other side. The two other pieces run from this point to the stern and are each about 9 feet long. The joints should have an inch and a quarter butt block on the outside rounded on each end, as shown in the drawing, and bored for row locks. This forward piece being hard to bend may have to be sent to the mill to be steam bent. Fasten the wash rail securely to the clamp, as shown in the detail drawings. The tops of the frames, clamp, and planking are covered by the plank sheer, forming a narrow deck around the cockpit, and the detail drawings show how it is put on.

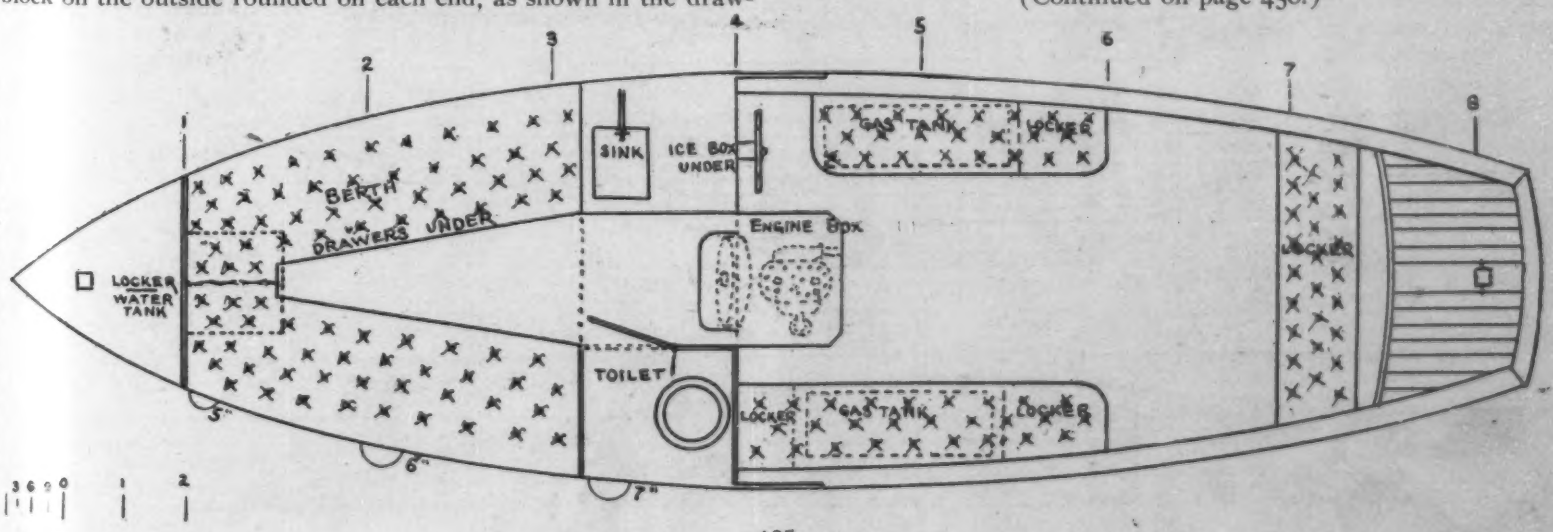
The engine bed can be put in at this stage. The plans show the dimensions, but the position of the cross pieces can only be determined after you know the measurements of the engine you are going to install. To line up for the engine, run a wire through the center of shaft hole, fastening the forward end to a cross-piece far enough forward to be out of the way when working on the bed pieces. The dimensions of the engine will give you the distance from the center of the shaft to the bottom of the bed piece. The propeller shaft should slip into the engine coupling without binding in any way. In putting in the floor timbers place the ones at the bow and stern first, and by stretching a string between these two all the others can be brought to the same level.

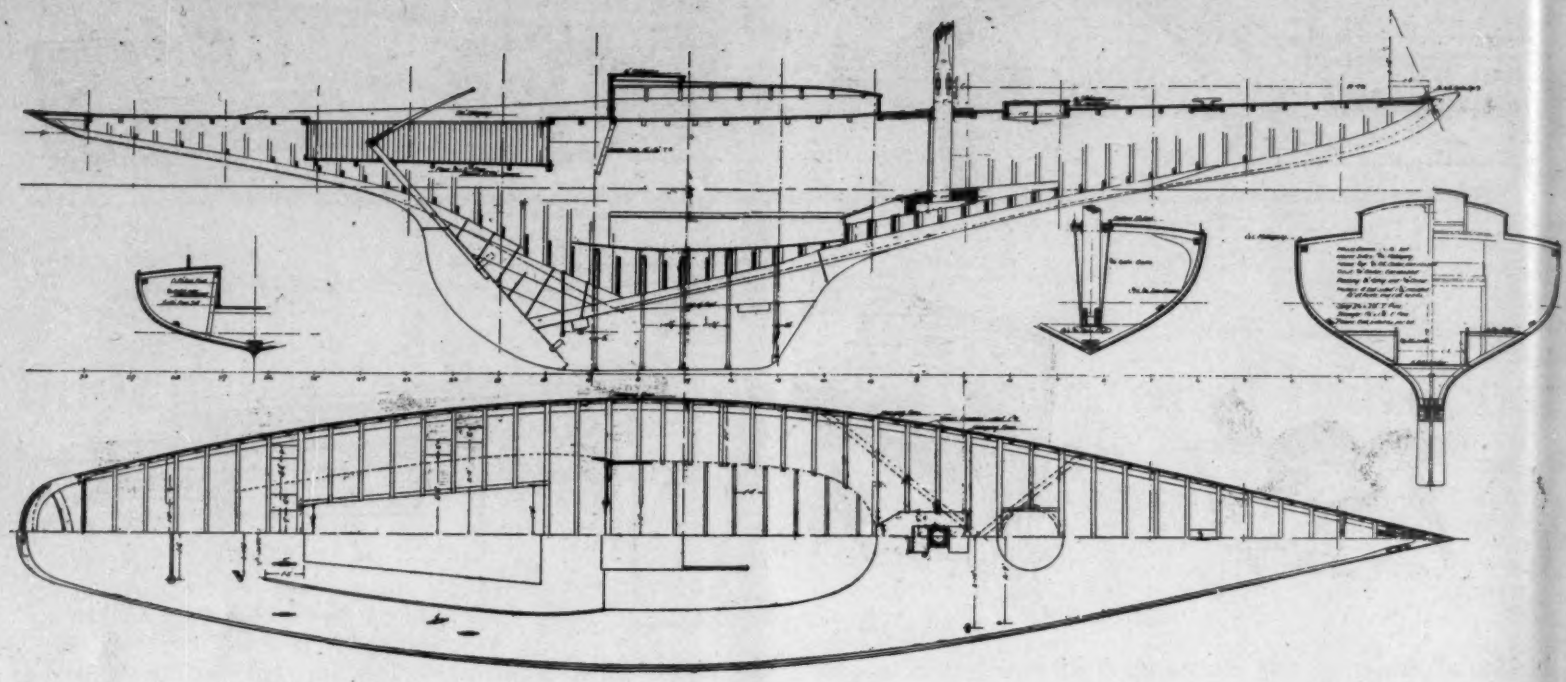
The rubbing streak is of half-round oak, 1¼ by 1½ inches. Hollow out the inside face, as this allows it to fit tight to the skin of the boat, and filling this hollow with white lead before the rubbing streak is put on will prevent water from running down behind it and making black stains on the white paint.

To finish off the boat varnish deck, cockpit and interior, and see that the bottom is painted with at least two coats of good copper paint. A priming coat of red lead can be put on before the first coat of copper.

The drawings and description so far have all had to do with the open boat model, but if you desire to build this as a cabin

(Continued on page 450.)

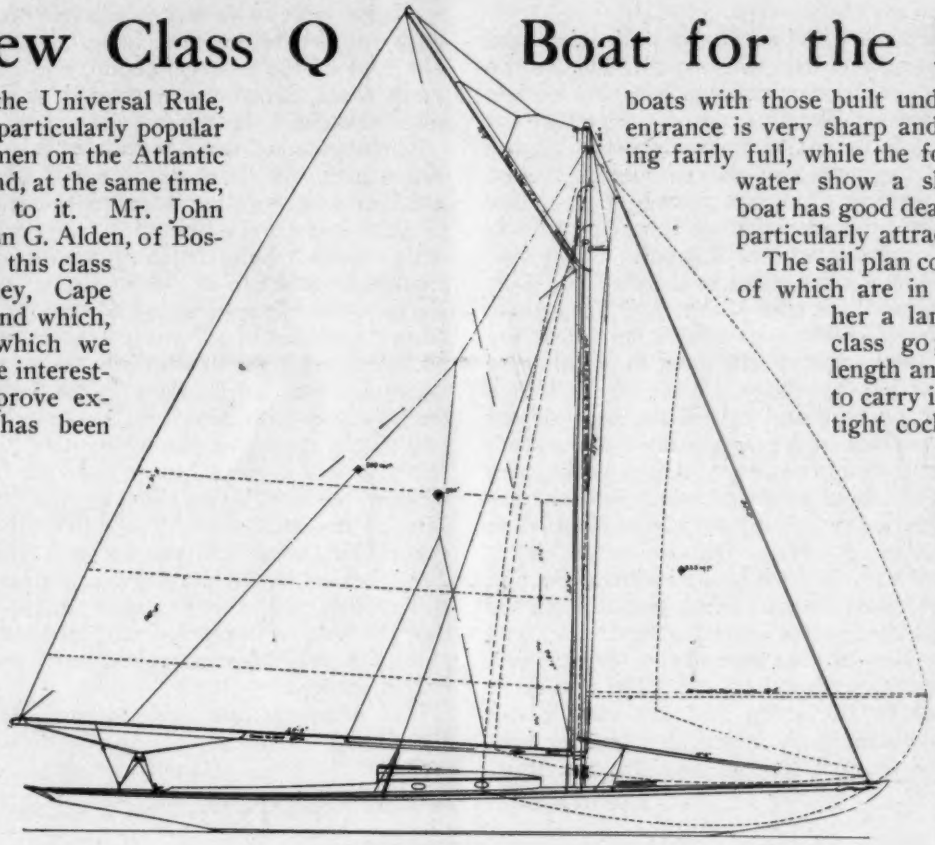




A New Class Q Boat for the Provinces

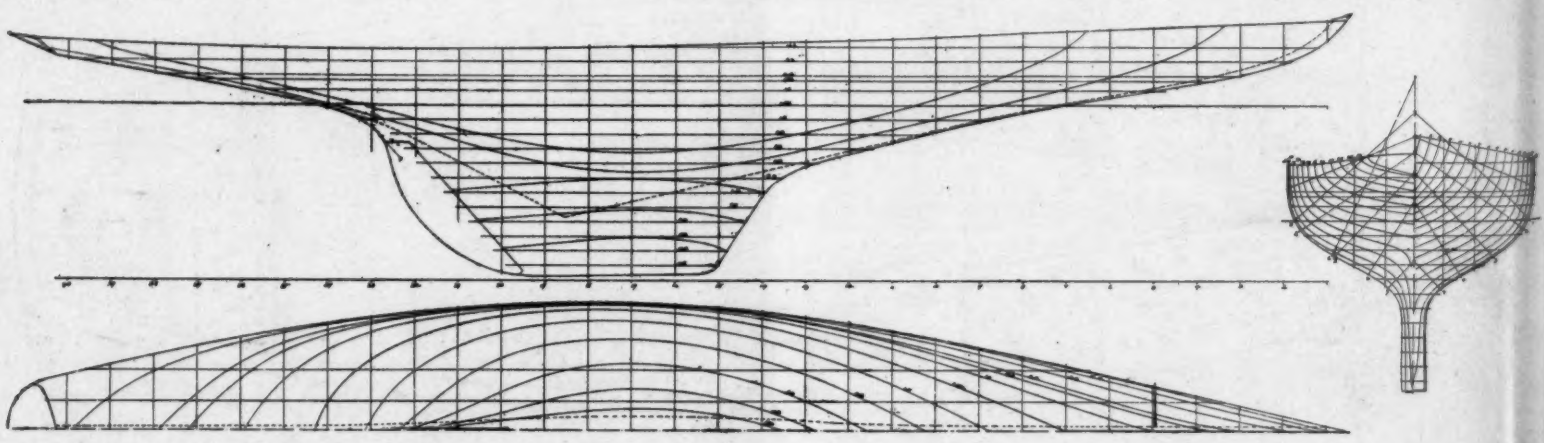
THE Q class, under the Universal Rule, has always been a particularly popular one among yachtsmen on the Atlantic coast, and some very fast and, at the same time, able boats have been built to it. Mr. John Pinaud, associated with John G. Alden, of Boston, has designed a boat of this class for a yachtsman of Sidney, Cape Breton, which is unusual, and which, judging from the plans which we publish here, embodies some interesting features, and should prove extremely fast. The boat has been built in the Provinces, and will be raced this summer.

The principal dimensions of the boat are: Length over all, 46 feet 6 inches; length waterline, 26 feet; extreme beam, 8 feet 9 inches; draft, 5 feet 11 inches. The ends are long drawn out, while the sections forward are fairly sharp; and she seems to combine the best features of the old Seawanhaka Rule boats with those built under the present rule. The entrance is very sharp and easy, the under body being fairly full, while the fore-and-aft lines above the water show a slight reverse curve. The boat has good dead rise, and the sections are particularly attractive.



The sail plan contains 930 square feet, 705 of which are in the mainsail. This gives her a large rig, as boats in the Q class go; but, on account of her length and beam, she should be able to carry it easily. She has a watertight cockpit, with the deck beams carried across at the forward end to form a bridge deck, while there is a low, narrow cabin trunk, giving comfortable accommodations below, with 5 feet 2 inches headroom under the carlins. There are transoms on either side, and comfortable cruising accommodations could be arranged. The ballast is all outside.

The boat is built in the best manner possible.



A One-Design Class of 16-Foot Catboats

TO show the hold that sailing still has on those waters where conditions are suited to the sailboat, it is only necessary to look at the great interest that is being taken in small, one-design class racing. One of the latest clubs to take up one-design racing is the Annisquam Yacht Club, located on the Annisquam River, near Gloucester, Mass., where they have recently adopted a 16-foot catboat for afternoon sailing and racing, the plans of which, from the board of Mr. Harry L. Friend, of Boston, we reproduce here. The proposition for a one-design class seemed to strike a popular chord in the club, and inside of two days from its promotion orders for ten boats were in, and within two weeks a total of twenty boats for the class had been ordered; here the committee was obliged to stop, owing to the impossibility of getting further deliveries in time for the opening of the season.

The boats are 16 feet long over all, 15 feet 4 inches on the water, 7 feet beam, 1 foot draft without board, and have a sail area of 175 square feet. They are cedar planked, copper fastened and mahogany trimmed, and will cost, complete with Wilson & Silsby sails, about $225.

This is one of the biggest classes that has ever been promoted, and the boats should provide the members of the Annisquam Yacht Club with lots of fun.

They are a particularly good size, being small enough to be built at not too great an expense, and yet are large enough to be *real* little boats. The lines are clean and well turned, and the boats will have a very "classy" appearance, as the plans show.

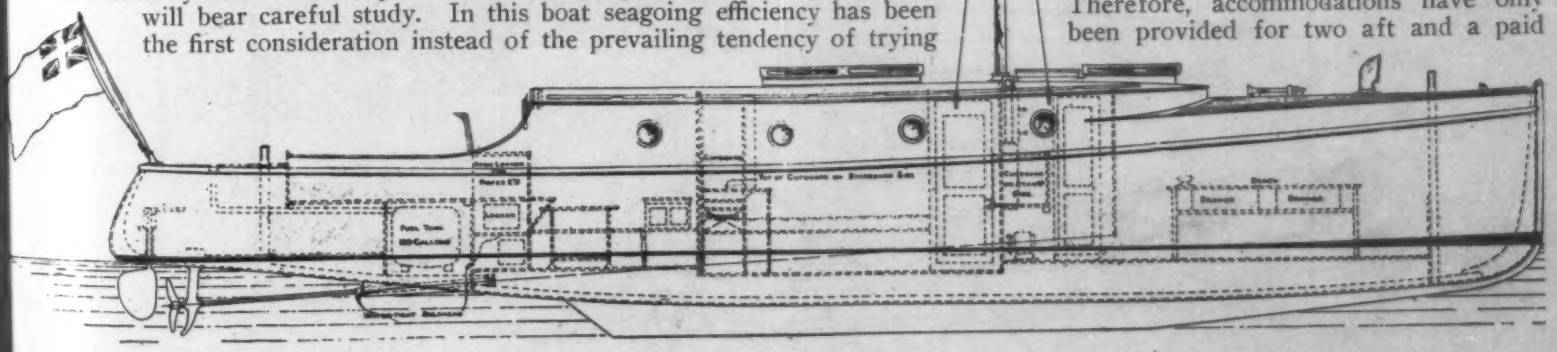
The center board is fairly large, giving a good-sized lateral plane, and the boats should be able to go to windward very well for craft of this type. The rudder is hung outboard, so that they are "all boat" up to the limit of their length.

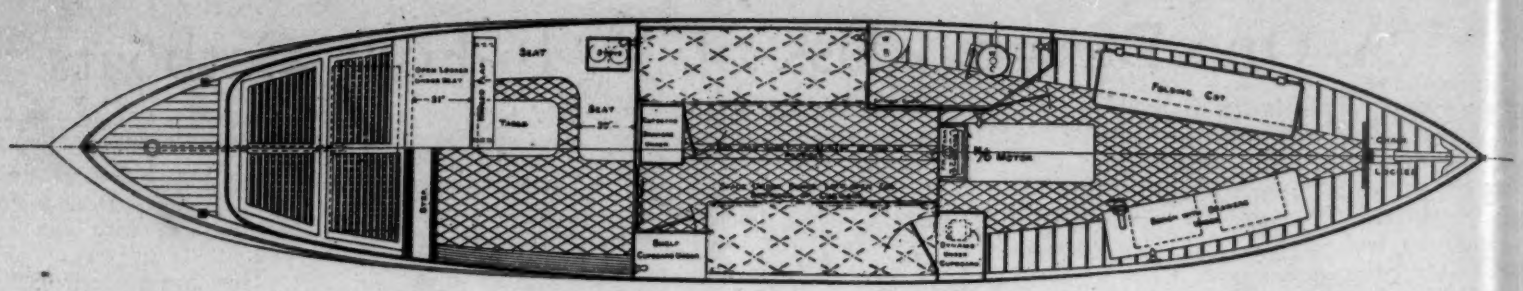
The cockpit is large enough to hold comfortably six or eight people for afternoon sailing, if desired; which is asking a good deal of a 16-foot boat.

The sail plan, while not excessive, is large enough to give the boats a good turn of speed. It is gratifying to see the cat rig adhered to on boats of this size, as the prevailing tendency toward jib and mainsail boats, while an excellent thing in boats above 20 feet long, does not provide a particularly efficient rig for small boats, by reason of the sail area being cut up.

An English 43-Foot Cabin Cruiser

IT is always interesting to note the development of certain types of power boats in other countries, and for this reason the 43-foot cruiser which has recently been built by Messrs. Thornycroft & Co., of England, for one of the firm, will bear careful study. In this boat seagoing efficiency has been the first consideration instead of the prevailing tendency of trying to see how much living accommodation can be crowded into a given length without any reference to other qualities. Therefore, accommodations have only been provided for two aft and a paid





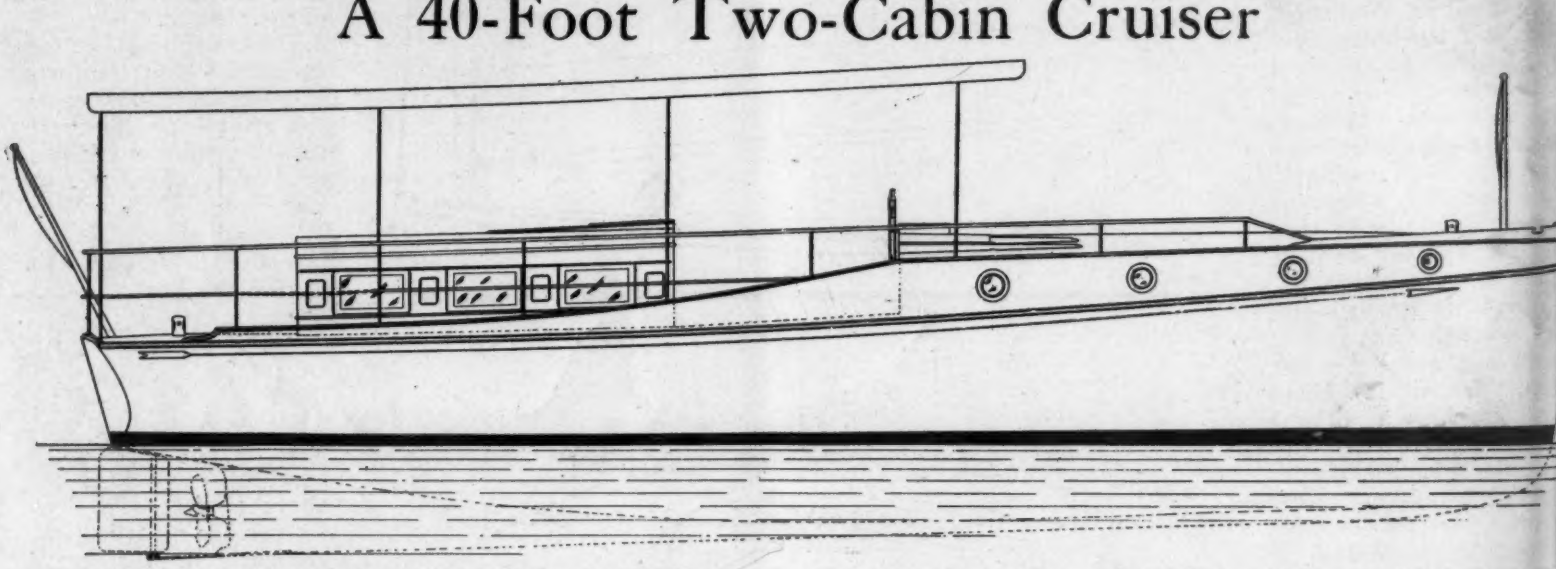
hand forward, though extra sleeping accommodations could be arranged with very little trouble.

The boat is 43 feet 6 inches long, has a beam of 8 feet, and draws 2 feet 6 inches. The construction is fairly light and the lines are fine, the entrance being sharp, with considerable flare to the top sides, the bilge fairly hard and the run flat. On deck she is somewhat of a combination of the raised deck and trunk cabin types, the trunk cabin ending about 10 feet abaft the stem in a short raised deck. She is thus all decked in, except for a small cockpit aft, where the steerman's seat and engine controls are located.

Below, the first compartment forward of the cockpit is fitted up as a sort of messroom or lounging room, some 6 feet long, which could be utilized as a sleeping compartment, if desired. Forward of this is the main saloon with a transom berth on either side and with plenty of locker and cupboard space. There is a large toilet room on the port side. Forward of this is the engine room and forecastle, this compartment having so much room in it as to be quite spacious. The engine is a 60 horsepower, 6-cylinder Thornycroft motor, which turns up 1,000 r. p. m., and which, it is estimated, will drive the boat at a speed of 13 to 14 knots, the whole outfit weighing only 14 cwt. She has a tankage sufficient to give her a radius of 250 miles at full speed.

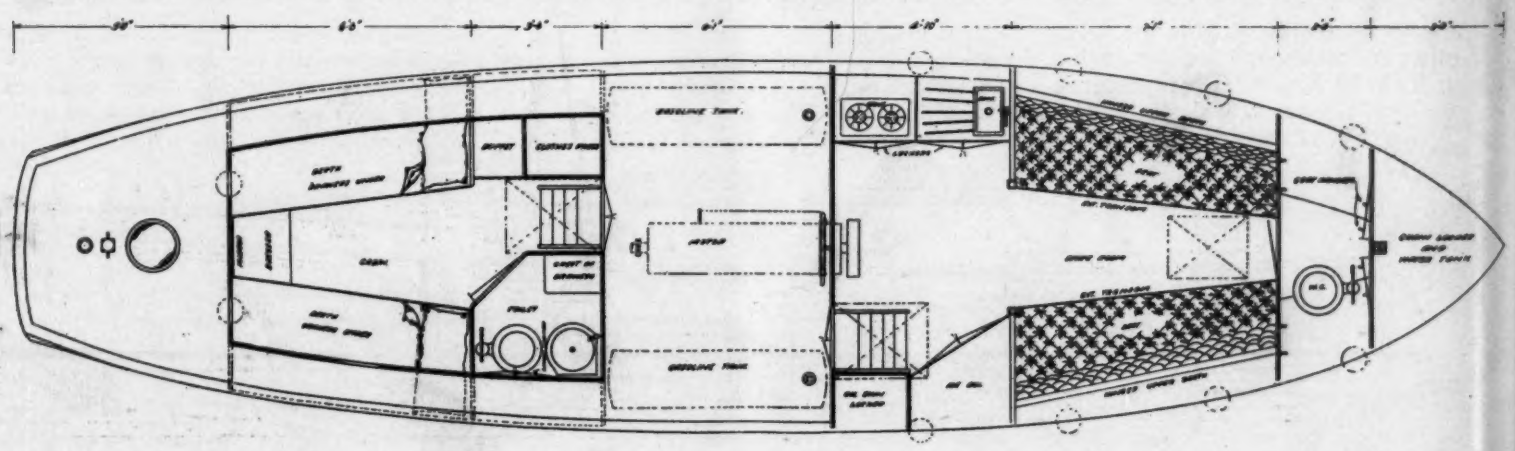
A small hatch forward of the mast gives access to the engine room without going through the cabin. The layout of the interior is unique, and will bear careful study by those planning new boats. We are indebted to *The Motor Ship and Motor Boat* (England) for the plans.

A 40-Foot Two-Cabin Cruiser



THE 40-foot cruiser designed and built by the Weckler Boat Company, of Chicago, for Mr. W. H. Young, of the Columbia Yacht Club, is one of a set of stock boats that this company has recently designed. This boat is 40 feet long over all, and has a number of points which cannot be secured in a smaller craft. She is of the popular double-cabin type and her accommodations are laid out as follows: Starting forward is a large chain locker and water tank, furnishing running water to all parts of the boat. Following this is a toilet room fitted with the usual fittings, while still further aft is the main cabin, with two broad settees, which are used as berths at night and have hinged backs that form upper berths, so that four persons can be accommodated in this compartment.

Following the main cabin is the galley. On the starboard side



is a large refrigerator and an oilskin locker. The latter is fitted with a grating at the bottom, so that the water will drip into the bilge; and has a door that is well ventilated, so that the oilskins will not mildew.

The fly wheel of the motor projects into the galley just far enough to allow of easy starting. The engine is of the 4-cycle, 4-cylinder type, of 35 horsepower, and a cruising speed of 10 miles per hour is expected. The gasolene tanks are of pressed steel and are also under the bridge deck, so that all weights are amidships. A wide companion slide leads from the galley to the bridge deck. This latter is of good size and can be fitted with broad settees at the forward end of the after cabin if desired. The steering wheel is amidships. The motor controls are brought to this point so that one man will have entire charge. The deck around the after cabin is flush and protected by a bulwark of substantial height, being a continuation of the raised sides forward. The after deck is of ample size, and this, with the bridge deck, furnishes seating room for 15 to 20 people, certainly a large company for a 40-footer.

A companion slide just off the center line of the boat leads to the after cabin, which has been designed as the owner's quarters. Two single berths, each 3 feet wide for their entire length, a large toilet room containing basin with running hot and cold water, linen locker and a high chest of drawers, a mahogany dresser with mirror, a buffet, and a large clothes press make this compartment extremely complete and provide all the comforts of home.

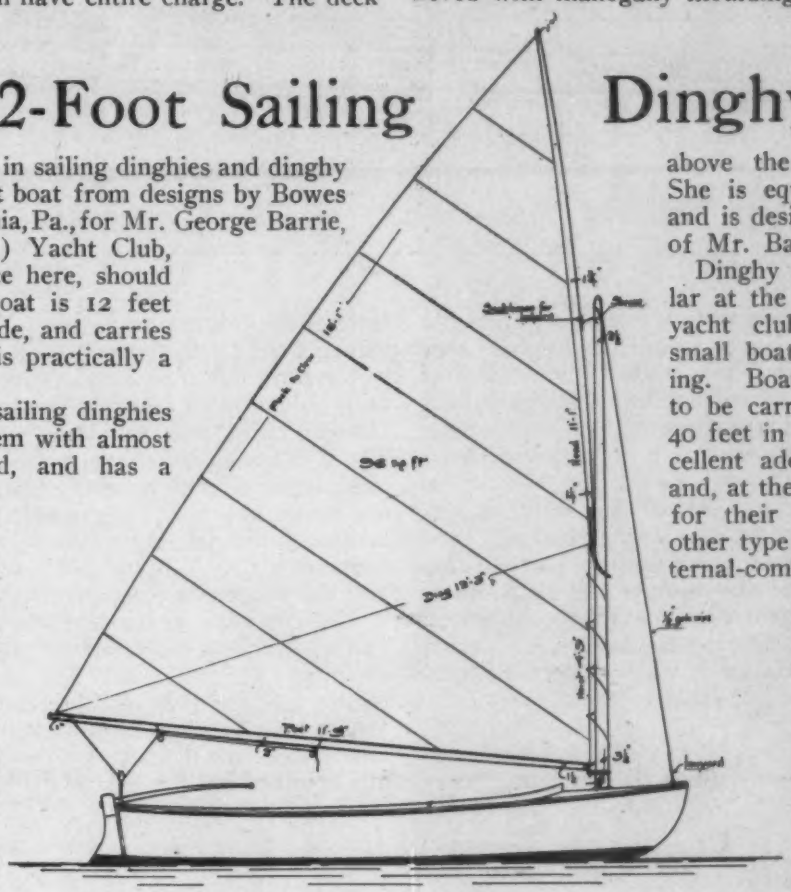
The woodwork in the owner's quarters is of white enamel relieved with mahogany mouldings.

A 12-Foot Sailing Dinghy

WITH the growing interest in sailing dinghies and dinghy racing, the little 12-foot boat from designs by Bowes & Mower, of Philadelphia, Pa., for Mr. George Barrie, of the Corinthian (Philadelphia) Yacht Club, the plans of which we reproduce here, should prove of interest. This little boat is 12 feet long over all, 4 feet 5 inches wide, and carries 96 square feet of sail in what is practically a sliding gunter rig.

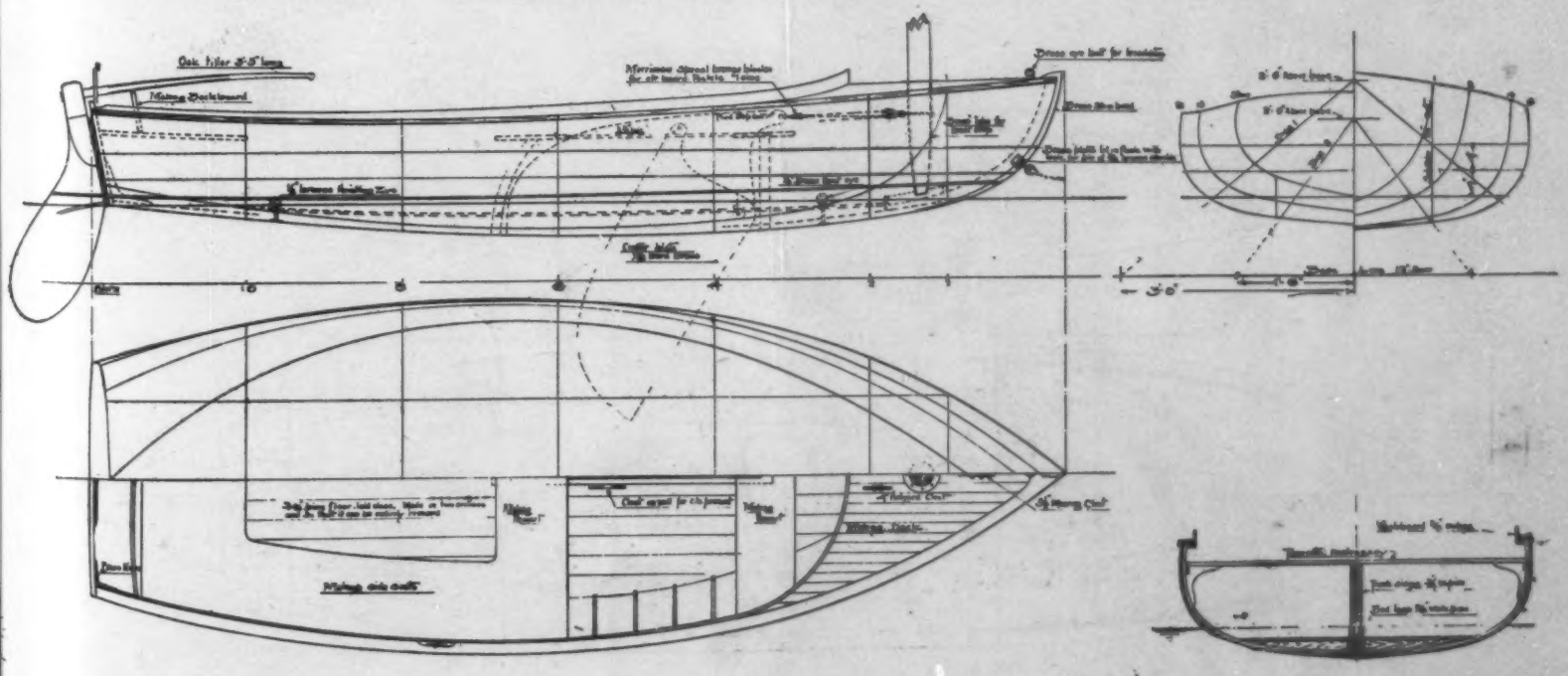
She differs from most of the sailing dinghies one sees in having a rounded stem with almost two feet of overhang forward, and has a brass centerplate of rather unusual design. She is decked over forward with mahogany, and has a coaming that runs entirely around the boat from a point just aft of the mast, making her unusually dry for a boat of this type.

Her sections are unusually good, with moderately rounded, high bilges, easy entrance, and clean run. She is finished in the very best manner, with mahogany thwarts and side seats, a pine floor raised several inches above the keelson, and cedar planking. She is equipped with two hoisting eyes, and is designed to be carried at the davits of Mr. Barrie's power cruiser Omoo.

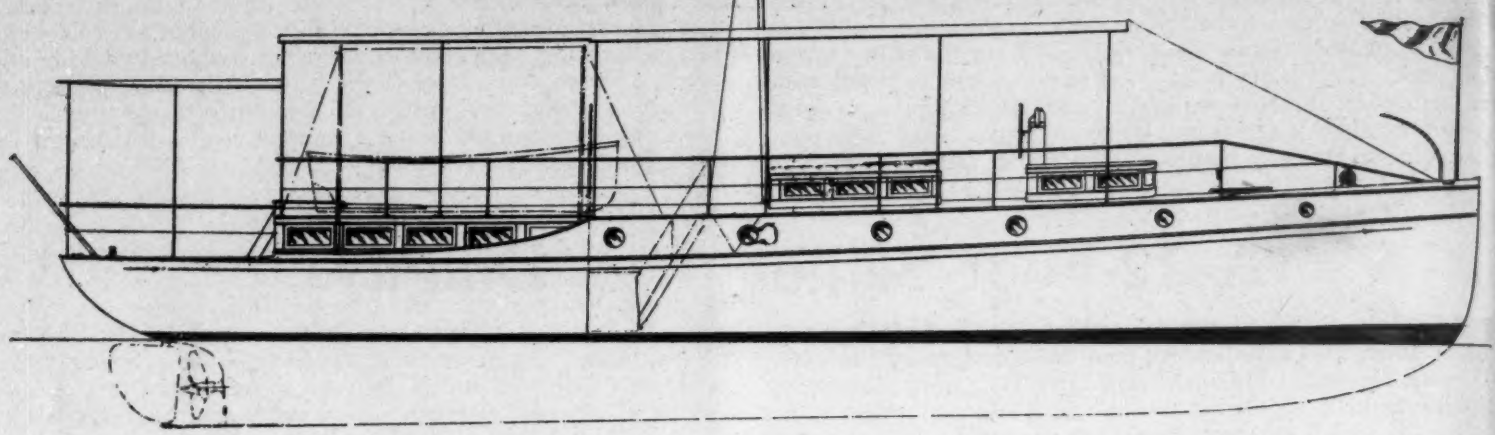


Dinghy sailing and racing is very popular at the present time, and a number of yacht clubs are fostering this type of small boat for one-design and class racing. Boats of this size are small enough to be carried on any power cruiser over 40 feet in length, where they make an excellent addition to the yacht's equipment and, at the same time, furnish lots of sport for their owners, especially where some other type of power is desired than the internal-combustion engine.

There has been a good deal of discussion lately as to the comparative merits of the cat, sloop, or lug rig for sailing tenders, and the merits of each rig have been rather fully discussed in this magazine. It seems as if the designers have reached the proper solution of the question in this rig.



A 50-Foot Power Cruiser with Some Unusual Features

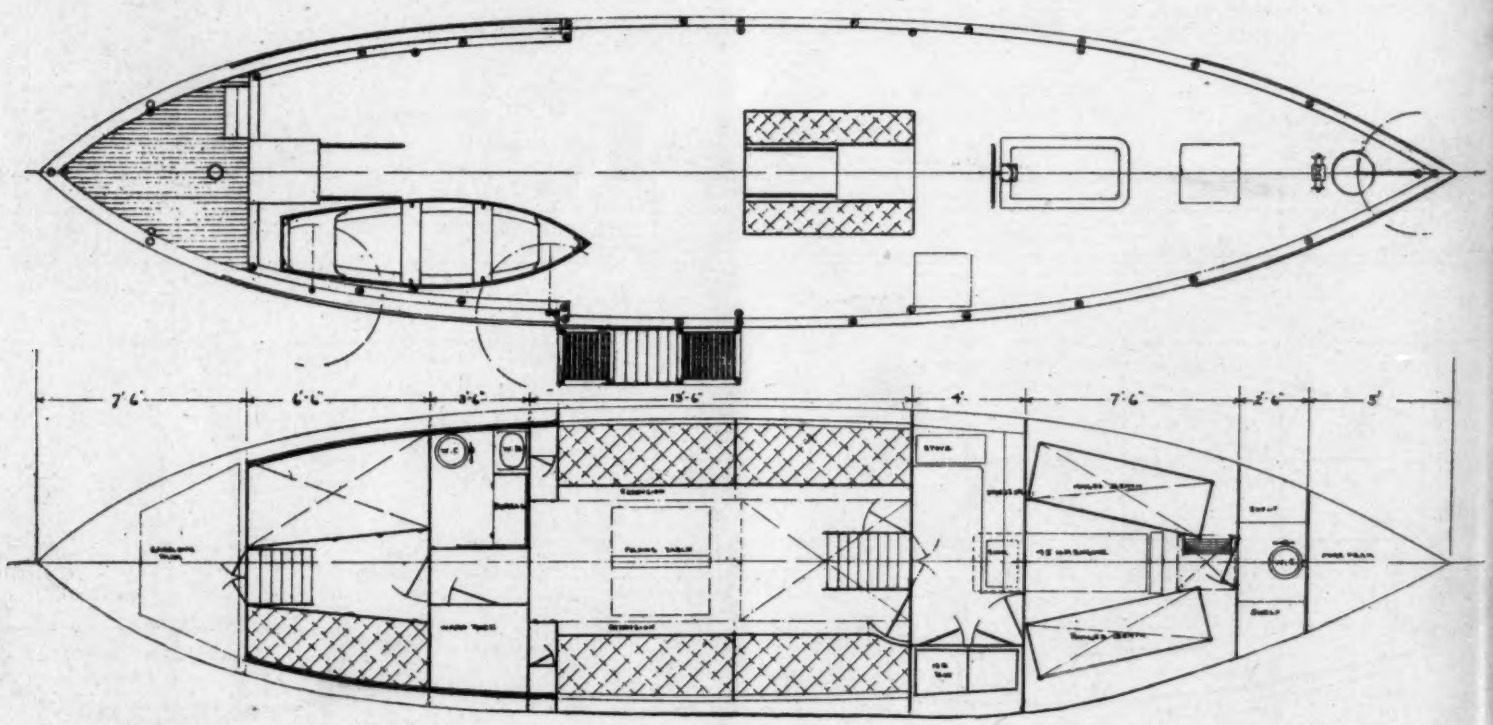


A VERY handsome and able 50-foot power cruiser, from the designs of the New York Yacht, Launch & Engine Company, Morris Heights, New York, is shown in the accompanying drawings. The boat has many excellent features to recommend her, and an unusual deck arrangement that should make a distinct appeal to those who know the value of sufficient elbow room on deck.

This boat is 50 feet long over all, 45 feet 7 inches on the waterline, has 11 feet beam, and draws 3 feet of water. She has a very pleasing profile, with more sheer than is common in boats of this type and without any unsightly houses to spoil her appearance. The top of the cabin house is used for a deck and runs almost the full length of the boat (except for a short, 7-foot after main deck), broken only by two square skylights, one of which covers the companionway to the main saloon. This deck is covered by an awning on permanent stanchions.

Below, it will be noticed that the engine is placed forward and, there being no sunken steering well, there is good headroom throughout this compartment. Pipe berths and a toilet are also shown here for the crew. Next comes the galley, the full width of the boat, and unusually commodious and well appointed. The main saloon is 13 feet 6 inches long, and has two extension transoms on either side, providing sleeping accommodations for four. There is a companionway at the forward end leading to the deck close to the steering wheel. Abaft of this saloon is a lavatory on one side and a very large wardrobe on the other, with a passage between them leading to the after stateroom. This latter room contains a double berth and a transom on the opposite side. It also has a separate companionway to the after deck.

The engine is a four-cylinder, 6½ x 8½ Twentieth Century motor, which, it is estimated, will drive the boat at a speed of about 11 miles an hour. The gasolene tank is located aft, under the deck. The boat will be planked with cedar, while the deck fittings will be of mahogany. Inside, the trim will be mahogany and white enamel. She is a very complete little ship and unusually commodious for a boat of this size.

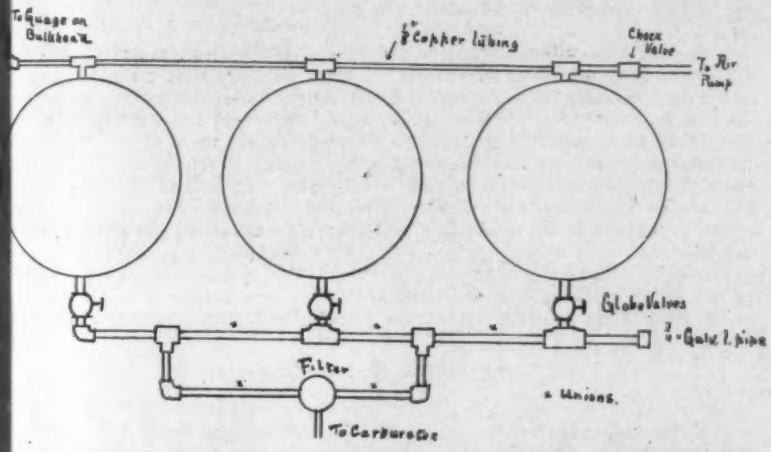


USEFUL HINTS & WRINKLES

Under this head we will publish short articles from the readers of YACHTING, describing original ideas they have worked out for improving the efficiency and handiness of their boats and engines. These will be paid for at space rates. Articles must not be over 500 words in length, should be accompanied by ink drawings where possible, and must be addressed to Editor of YACHTING, 141 W. Thirty-sixth Street, New York. Here is a chance to be a philanthropist by giving to other boat owners information on some of the handy wrinkles you have applied to your own craft.

An Air Pressure Gasolene System

The accompanying drawing illustrates a plan for an air pressure gasolene system evolved from practical experiments. As a simple air pressure system it was first applied to a single tank, then to two tanks, and finally to three. At no time was the slightest difficulty encountered from leakage, occlusion of piping, difficulty in maintaining pressure, or flooding of the carburetor. The center axis of the tanks was about on a level with the carburetor and from 2 to 2½ pounds gauge pressure were all



that was necessary to hold a steady flow. The float in the carburetor was quite able to check flooding. A small hand bicycle pump attached to the end of the copper tubing brought to the bulkhead, furnished the air supply. The gauge was here also.

The following points are to be noted: (1) Equal air pressure in each tank, whether supplying fuel or not; (2) each tank may be drained independently; (3) two courses of flow to the filter after the fuel leaves the tank; (4) but one cap need be removed to fill the entire system; (5) that one or more tanks may be held in reserve; (6) in rough weather, with the boat rolling, the flow of fuel from one tank to another insures a steady supply as it passes over the pipes leading to the filter; (7) ready balancing of tanks from the reserve tank.

This plan may be modified somewhat by using independent piping from each tank to the filter. By means of the valves the filling and drainage schemes are worked out as before.

I successfully used ordinary galvanized pipe and fitting for two years with entire satisfaction. All joints were set up in very thick shellac and the pipe painted with the same, after which a few teaspoonfuls of ether were put in a tank and about 10 pounds pressure applied. If any leak is present this will enable it to be readily detected. If the tanks are firmly anchored no fear of pipe strains need be entertained. Neither will one be bothered with scale if lubrication through the gasolene is adopted.

L. H. PRINCE, M. D.

A Handy Locking Hatch

The following is a description of a hatch opening and locking arrangement which may be of interest to boat owners. This particular hatch was on the forward deck of a 28-foot raised deck cruiser. It can be opened facing either forward or aft; opened full, half way, or closed entirely, and can be locked in any of these positions. When desired it can be removed entirely.

As will be seen from the drawings, two pairs of hasp hinges are used. The metal parts are all-brass castings. The patterns can be easily made from the dimensions given out of soft wood, and the castings can be made very cheaply at any brass foundry. The holes can be drilled with a small breast drill.

The hatch itself is of the ordinary construction, with deck coaming as shown, and is about 20 inches square. When the castings shown in Fig. 3 have been drilled and countersunk for the screw heads, they are screwed to inside of hatch cover as shown in Figs. 5 and 6 at *A, A*. Then a pair of alternate long and short straps (Figs. 1 and 2) are set into each, as shown, and held by a quarter inch brass pin driven through and riveted. A couple of blocks of wood, the same height as the straps when folded

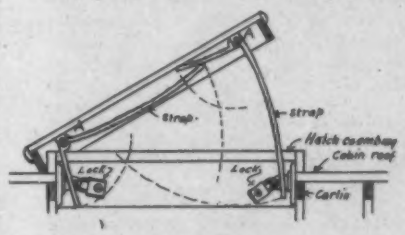


Fig. 5 Side section of hatch.

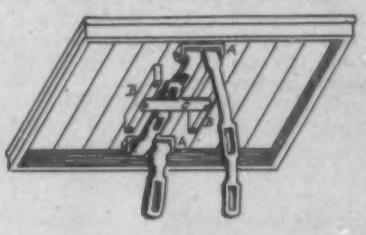


Fig. 6 Perspective end view

against the cover, can be screwed as showed at *B, B*, Fig. 6. A swinging brass strip pivoted on one block and hooking into the other will hold in position any of the straps that are folded back (*C*, Fig. 6).

The two double lugs, Fig. 4, are screwed to the inside of the hatch coaming, as in Fig. 5. The slots in the straps will fit over these lugs and the straps can be locked in position by a couple of small Yale locks through the three-eighth-inch holes in lugs. When the hatch is closed entirely, fasten by the two short straps; when opened use a short strap on one (low) end and long strap on other end; the hatch can be locked wide open or half open. (See Figs. 5 and 6.)

When hatch cover is removed entirely fold all straps up under brass strip *C*, Fig. 6.

H. H. PARKER.

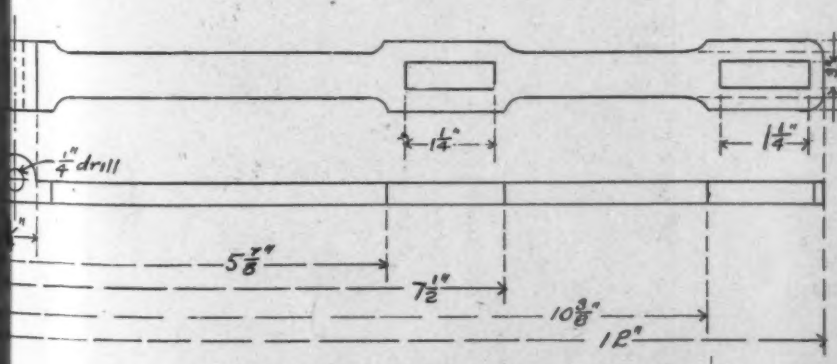


Fig. 1 Long strap. 2 castings, brass.

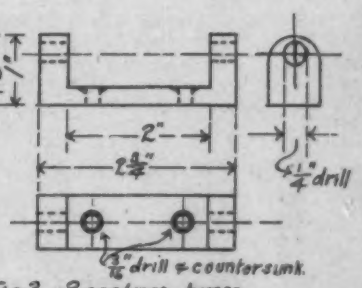
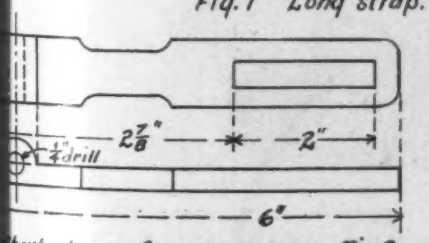


Fig. 3 2 castings, brass.



Short strap; 2 castings, brass. Fig. 2.

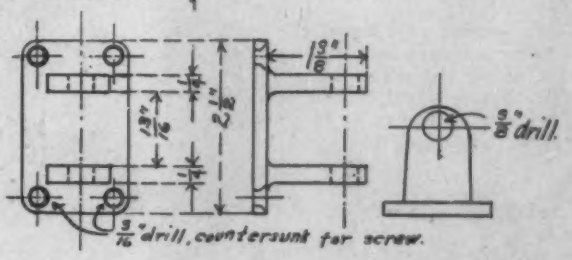


Fig. 4. 2 Castings, brass

Mess Room Talk

IN this Department we will answer questions concerning the problems which boat owners are constantly running up against in the operation of their motors or the handling of their boats. Theoretical as well as practical questions will be answered promptly by mail, and when of sufficient interest will be printed for the benefit of YACHTING readers. This service is free. Don't hesitate to make use of it. Address, Information Department, YACHTING, 141 W. 36th St., New York City.

Auxiliary Power for Small Space

WORCESTER, MASS.

I have a 35-foot sloop. I wish to put a two-cylinder or four-cylinder engine under the cockpit floor. The available space is wide athwartships, but it is short fore and aft and is not very high. I wish to get a 10 or 12 horsepower engine, either new or second hand. The distance from the top of the spark plug to the lowest part of the engine must be short, otherwise there would not be room for the engine unless it should be allowed to project above the cockpit floor. I would not want such a projection. It probably could not be arranged so that there would be room for a reverse gear; if not, then I shall be obliged to use a reversible propeller. I prefer a four-cycle, but would use a two if necessary. I have seen at exhibits, when I was not interested, some high-speed engines of small size, and probably of no great durability, that I think would please me. I have now a four-cylinder Buffalo in a motor boat, which gives satisfaction. There would not be room for such an engine in the sloop.

Will you kindly give me the names of makers of two and four-cycle engines which are conspicuously short from the top of the spark plug to the lowest point of the engine? A. J. P.

You do not give any of the dimensions of the space under the cockpit floor where you desire to install this power. However, I think it should be possible to get an engine of about 10 horsepower of short stroke that will be sufficiently low to fit in the space. You would not, of course, want a small high speed engine for your boat, as there would be a great deal of lost power, and I don't think any of the small engines, such as you mention, would give you satisfactory service.

The best way for you to do would be to send for the catalogue of some of the marine engine builders that advertise in YACHTING, as these catalogues give installing dimensions, and therefore the height of the motor. Then you could tell exactly whether the motor would fit your space. It should, however, he possible for you either to get a two-cycle or a four-cycle motor of not over five-inch stroke which would suit your requirements.

Rake of Propeller Shaft

MOUNT VERNON, N. Y.

Could you inform me how to determine the slant of a propeller shaft from engine to stern of craft. The shaft is on an angle at present which seems too great, as the propeller draws the stern of the boat down in the water instead of pushing the boat forward. The engine is a 3½ horsepower Palmer, and a 17-inch two-blade reversible wheel is used.

Would more speed be derived from a more horizontal shaft from the engine to stern of boat and propeller? The boat is a fan-tailed 18-footer and more speed should be had from the engine. When the engine is speeded up the boat vibrates but does not seem to make much more speed. W. H. K.

The nearer a propeller shaft is placed horizontally in the boat, the more power is derived from the wheel, and an extreme angle of shaft results in appreciable loss of power. A rake of five to ten degrees is not excessive, however, and unless your power is very limited the loss will not be appreciable.

You do not say what the angle is of your shaft, but in a regular fantail stern boat it should be possible to get the shaft down to an efficient angle unless the engine is installed in the stern, in which case it can be moved forward to center of boat.

You don't say what speed you are getting now from the boat. But the fact that when you speed the engine up the wheel races and the boat vibrates would seem to indicate that either the wheel is too small or it does not have enough pitch. A 17 or 18-inch wheel should be about right for the size of boat you mention, however. Therefore, I should take it that you might have more pitch in your propeller. Why not try a three-bladed wheel with increased pitch?

Use of Universal Joint in Shaft

CHESTER, NOVA SCOTIA, CANADA.

I have a four-cycle two-cylinder 25 horsepower heavy duty motor that I wish to install in a shoal draft houseboat hull, and in order to get the proper clearance for the fly-wheel and propeller I must use a universal joint. The shafts will meet at an angle of ⅞ inch to the foot. I am told universal joints are a bad thing in boats, although no one seems to have a good reason why they are bad. Will you tell me the objections to their use, and if the angle at which I am placing the joint is excessive? I am looking forward to a long trip in the boat and do not want to start out with an improperly installed engine. G. L. Z.

If properly installed I think a universal joint will give you good satisfaction. The particular objections to their use are that no shaft with a break in it is as good as a solid shaft when under pressure strain; and also, that a universal joint is apt to make the shaft bearings close to the joint heat on account of the additional pressure put upon them. However, in smaller boats this has been easily overcome. Even in the big 80-foot yawl Esperanza, described in our April issue, you will notice that with a big 27 horsepower three-cylinder Wolverine engine, they have two universal joints set in the shaft line and they give excellent satisfaction without heating.

For open sea work, where lots of strain may come on a shaft by reason of the boat's pitching, the universal joint may be a source of weakness, but as they are built at present they are applicable to the power you mention.

Long Island Sound Schooners

POUGHKEEPSIE, N. Y.

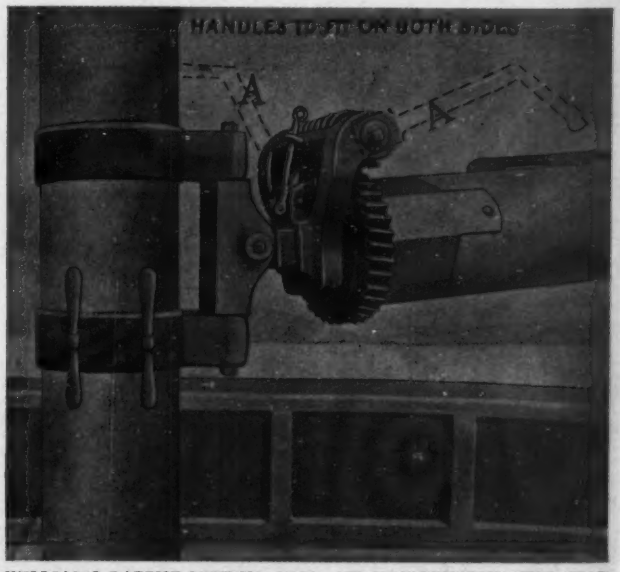
Could you kindly advise me as to the size of the Long Island Sound schooner class, a photo of which is published in the April number? F. S.

The dimensions of the Long Island Sound schooner class which you ask for are as follows: Length overall, 41 feet; length, waterline, 30 feet; beam, 8 feet; draft, about 6 feet; sail area, 780 square feet.

More About Roller Reefing Gears

RYDE, I. W., ENGLAND.

In your January number I notice a letter from E. W. S. asking about the reefing gear carried by English pilots. I have never seen the gear you illustrate, and agree with you that it is cumbersome and complicated. The enclosed photograph gives a good idea of the reefing gear in universal



WILLIAMS PATENT REEFING GEAR, AN IMPROVEMENT OVER GEAR DESCRIBED IN THE JANUARY ISSUE, AS IT WORKS WITH A WORMED SCREW INSTEAD OF RATCHET AND PAWL

on the Bristol Channel pilot cutters. For many years I had one of se cutters as a yacht, and fitted her with the Williams patent gear. t was splendid.

Although my boat was 50 tons, we could reef her easily under any conditions, and no matter what the wind were never obliged to heave to in order to reef. The only drawback, as you say, is that having the main sheet right at the end of the boom there is a great strain on the boom. There is also a fairly wide space between the mast and tack of mainsail. From personal experience I most strongly recommend this patent to your correspondent and to all cruisers, both large and small. There are no springs or wires to break and no pawls to jam the fingers. In fact, I have found it answers so well that I am now having it fitted to my 82-ton ketch. Should any of our readers desire fuller information and prices I am sure Mr. Williams will be only too pleased to give them. Hoping this may be of interest to your readers,

ALFRED J. PAZOLT.

Reverse Gear or Reversing Propeller

CAYUGA, N. Y.

Can you tell me which I would find most satisfactory to use in a motor boat 30 feet long, a reverse gear or a reversing propeller? The boat has about 15 horsepower and I would like to save all the space possible.

H. G.

All things taken into consideration, a reverse gear will give you more satisfaction than a reversing propeller in a boat of the size you mention, although a reversing propeller could be installed that would probably work in a satisfactory manner. In fairly large boats a good reverse gear will stand the strain of hard usage better than the mechanism of a reversing propeller. In small boats this is not such a vital matter and either would probably give satisfaction. We have heard of reversing propellers being used on boats up to 80 feet in length, but in these cases they were usually built especially to meet the requirements of some particular boat. As reverse gears come at present, bolted on the bed piece of the engine, the loss of room is not a matter of moment in a boat of the size you mention.

Automobile Engine for High-Speed Boat

NEW YORK, N. Y.

Kindly advise if an engine taken from an automobile (providing it is in good condition) is suitable to run motor boat 30 feet long, or is there a difference in build between an engine for motor boat or automobile?

V. C. G.

A number of automobile engines have been successfully installed in speed boats where, owing to the light weight of the engine and the high speed at which they could be run, they have proved very satisfactory. Without knowing the engine you wish to install in the motor boat, I am unable to say whether or not it would prove successful. A special type of marine engine is better for a boat.

A marine engine is run under full load most of the time, which will usually cause a considerable wear on the light parts of an automobile engine. If you could give me any more particulars about the type, power and speed of the engine and boat, I could probably give you some more definite information.

A Correction

In the May number of YACHTING appeared a picture of Reliance and Shamrock taken in their last race off Sandy Hook. The caption, in referring to the two boats, got their names twisted, calling Reliance Shamrock and vice versa. The two boats are so much alike that even side by side it is hard to tell them apart. Lipton's racing flag on the Shamrock is one of the few distinguishing marks. The boat to windward is the Reliance and not the one in the foreground, as stated. We regret the error in naming these boats, but the statement in the caption as to the pounding would hold equally true with either yacht, as they were both built to an extreme of flatness.

The New 46-Foot New York Yacht Club One-Design Class

The speculation as to the degree of prominence the new Bristol class f 46-footers will take in the New York Yacht Club racing fleet the com- ng season was in good part answered early in April, when the first of the lass of sloop-knockabouts, the Barbara, owned by Harry Payne Whit- ey, was tried, first in light airs and then in a 15-knot wind in Narra- ansett Bay. The Barbara sailed like a witch in the light breeze, and in he second test tore through the rough water at fair speed, looking high; nd when, a little later, a northwest squall bore down off the south nd of Prudence Island the craft emerged from the ordeal with Robert V. Emmons, 2d, at the tiller, as though squalls were mere catspaws. She as as stiff as a church under the hammering from the wind puffs.

The rig of these boats, nine in all, is lofty and narrow. Without bow- prits no sail projects beyond the stemhead, and at the after end but very ttle of it; the main boom's overhang over the taffrail is not more than 2 feet.

As to the masts, the mainmast and topmast are l in the one piece and all spars are hollow to cut way the weight above the deck. While the orking topsails are small enough, comparatively eaking, the club topsails are great planes of nvas, for the yards are 35 feet in length, pro- cting 15 feet above the topmast head.

That the class will be much easier handled than e old style 46-footers Gloriana, Wasp, Humma nd later boats, was demonstrated beyond all rea- nable doubt in the trials of the Barbara. nocking about from the mooring off the Her- shoff piers in a light wind, the Barbara soon athered headway that gave power boats, skipping t of the harbor, all they could do to follow, hile when the breeze freshened to seven miles hour the Whitney racer left the smaller craft r astern. In this boat the usual Herreshoff fea- re was noticed, that of being sensitive to eights, for the simple moving about of the crew d the effect of the light catspaws of wind at e outset set the Barbara to slightly careening recovering, upon the influence of weights, both deck and upon the sails.

The class, as judged by the performance of arbara in her initial spin, will be as easily han- ed and thrown into stays as any small knock- out on the Atlantic Coast.

As to speed, Herreshoff is known to have im- roved upon himself in the new class, and the indication points to the boats being very fast and weatherly in a breeze with a weight of a dozen miles an hour. They are even better, comparatively, in a moderate breeze than a light one, by reason of the model being designed for great power, as shown by the leverage expected in a rig as lofty as is shown in the top hamper of the class of the Barbara.

Nine new jibless racers of the dimensions of Barbara should make great racing in the class among the fleets of the New York Yacht Club from now on. It is nearly a decade since there was a sizeable one-design class of single stickers built, and the last of these were the 57-footers, afterward the 60-foot quartette, of which the Istalena was probably the best known on account of her wins. Before that class of one-designs was the larger boats of the 70-foot class, which revolutionized matters in regard to speed, not excepting the slippery cup defenders that preceded the 70's.

The new 46's have been given the Herreshoff distinction of reversed bow curves, just abaft the stem. The forward ends are rather sharp and deep, with easy lines extending back to the bluff of the bows, which is hard to find. The model is an improvement over the Joyant, a Herreshoff-built boat, only that in the larger boat the midship section shows more fullness, not forgetting the difference in dimension of both.

THE FIRST OF THE N. Y. Y. CLUB'S NEW 46-FOOT ONE-DESIGN CLASS TO BE TRIED

The owners are all prominent and active in the racing lists of the New York Yacht Club and include Junius Spencer Morgan, Vice-Commodore George F. Baker, Jr., Ralph N. Ellis, Harry Payne Whitney, Pembroke Jones, Edmund Randolph, M. G. Hecksher, Cleveland H. Dodge and H. W. Maxwell.

In rigging the new 46-footers, the Herreshoffs applied a boom to the foot of the forestaysail, which is of good area and hoists from the deck fastening of the forestay, just abaft the stemhead. The mainsail, which the Barbara carried on her initial spin in Bristol Harbor, was very loose at the foot before the breeze increased, but the slack was soon distributed.

The boats of this fleet displace 24 tons of water and carry crews of six men. Either the owners or their representatives will sail the yachts in their races. Most of them have been known in yacht racing for a number of years, while two or more were owners of the fin-keel 30-footers of more than fifteen years back.

PHILIP H. FARRINGTON.

No Definite Answer Regarding Challenge

Although a month has gone by since the receipt, by the New York Yacht Club, of a challenge for the America's Cup from Sir Thomas Lipton, the club has not as yet seen fit to give a definite reply. It has, however, appointed a committee to consider the matter, which is according to precedent in the club, and this committee has asked Lipton for a little more definite information as to his views concerning the regulations for the race. The latter has replied that he would race under the old rules of the club which prevailed in the 1903 series, or, if the club preferred, he would race under the club's present racing rule, or what is commonly called the Universal Rule. This is where the matter stands at present. How long it will remain in this state only those on the New York Yacht Club's America's Cup Committee can say. It is hoped, however, for the satisfaction of the challenger and the public at large, that they will announce their decision shortly, so as to have the thing settled definitely one way or the other. Courtesy, as well as good sportsmanship, demands that the matter receive reasonably prompt attention.

Concerning Equipment

It is a common thing to hear at this time of the year a lot of growls and kicks against the Federal Government in regard to their motor boat equipment laws. For the most part, these come from men who do not know anything about the requirements of a proper navigating equipment and who are usually too mean to buy one for their boat. Many would-be sailors spend the last dollar they can scrape together on getting the *largest* boat that they can find for the money in sight, and have nothing left with which to get or renew her equipment. This is poor policy, and is like "spoiling the ship for a ha'p'orth o' tar."

The government regulations are not strict. In fact, they are extremely lenient, taking everything into consideration, and even if there were no government restrictions at all every boat owner should care enough for the safety of his boat and those aboard of her to provide everything—and a little more—that the inspection service demands. It is certainly poor policy to navigate in crowded waterways with a two-penny whistle that can't be heard a hundred feet, with sailing lights that won't stay lighted in anything over a ten-mile breeze, with no fire extinguisher and with a bunch of life preservers that are not worth the space they occupy. A few dollars more spent on a really first-class equipment is money well spent.

Don't stop at just what the government requires. Go it one better, and see that you have a first-class compass and binnacle, proper ground tackle sufficient to hold the boat if you ever get caught in a tight hole, lead line, log, etc. Even if you are only navigating alongshore, all of these things will come in handy; besides which the intelligent use of them will make a man more competent and self-reliant.

In the old days of the merchant ship it was found necessary to pass stringent laws for the proper equipping and provisioning of vessels which the cupidity of the owners would otherwise have sent to sea in poor condition. Don't make it necessary now to pass any more stringent rules than are at present in force for the equipment and inspection of motor boats and yachts. Remember that there is a fine of $100 or more staring you in the face if you don't provide what the law says is necessary, and see to it that you can look the inspector in the face, even if he catches you unawares.

Centennial of Perry's Victory on Lake Erie

It seems fitting that the centennial of Commodore Perry's victory on Lake Erie, when he took command of a hastily built and organized fleet and fought one of the great naval battles of history, should be celebrated by a water carnival on the very waters in which the engagement was fought. It is also fitting that this should bring together the representatives of the two countries that were then at war, and the present celebration next July will be all the more significant by reason of the good feeling exhibited in competition with those from the other side of the border. The Canadians have always been known as good sportsmen, and the racing will not only be of an international character, but will be keen and hard-fought.

The committee in charge of the celebration has worked well and intelligently to bring about the most successful celebration ever seen on the Great Lakes, and it deserves the support of every motor boat and sailing man, even at the expense of some personal sacrifice—although after once getting to Put-in-Bay we don't think that any man will consider that there has been any sacrifice connected with it.

A Perry Centennial Issue

In view of the importance of the two weeks' regatta and water carnival to be held at Put-in-Bay July 20 to August 2, in connection with the centenary of Commodore Perry's victory on Lake Erie, and the interest that the event is arousing, the August issue of YACHTING will be a special number, called the Perry Centennial Number, devoted particularly to this event. It will be published in time for distribution during the regatta, and will have much special matter of particular interest to those attending the meeting, and to yachtsmen generally who are interested in knowing what is doing in the boating world. It will be one of the notable issues of the year.

The Bermuda Race

On June 7 another annual Bermuda race for power boats will have started, and, from present indications, it looks as if there would really be a larger fleet ready to take the trip than ever before. However, it is best not to be too sanguine until the boats are actually on their way. That a good race is assured, however, is evident from the fact that Dream, last year's winner, and at least two or three other boats of equal ability are going, all in the hands of competent men. A full story of the race will appear in the next issue of YACHTING, written by a member of the crew of one of the boats. These Bermuda races have done a lot for the development of the cruising power boat, though in a measure it is strange that they have not brought about a somewhat more seaworthy model for those who want to do something more than cruise in sheltered waters. With very few exceptions, the average power boat is not yet what could be called a *seaworthy* model for ocean service.

Photo by A. J. Copp "KINGFISHER"
Finished with Valspar and Valspar White Enamel
Built by Milwaukee Yacht and Boat Co., Milwaukee, Wis.

Of course it's varnished with

VALENTINE'S VALSPAR
The Varnish That Won't Turn White

No other varnish is good enough

Experienced yacht owners nowadays specify VALSPAR at fitting-out time because—

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2. VALSPAR stays bright in spite of water exposure. It is the only varnish in the world that never turns cloudy or white under the action of water.
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5. It dries hard in a day.
6. It will stand the hardest kind of use.

GET THIS!

All you men of the ocean and rivers and lakes,
If you'd have real protection, and cut out mistakes,
Get "Valspar for Boats," for it fills every need;
Let us send you a copy,—a good thing to read.

There are good rules for painting and varnishing, too,
For staining, and how to prepare a canoe;
For removing old paint,—and more practical facts
That are useful for owners, from steam yachts to smacks.

Copy of this new Booklet will be sent free on request. Use the Coupon.

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Driftwood from Alongshore

The Perry Centennial Celebration Progamme

The committee having charge of the Perry centennial celebration regatta and the races of the National Association of Engine and Boat Manufacturers, which will be held on Lake Erie this year, has completed its work of arranging a programme so that the races can be run in sequence and in such a way that there will be no conflict and yet give plenty of time to take care of the many events which have been provided for. The power boat races will be held on the week of July 27 to August 2 at Toledo and at Put-In-Bay.

The city of Toledo's Perry Centennial Celebration Committee has donated $5,000, $2,500 has been given by the National Association of Engine and Boat Manufacturers, and $5,000 by the Perry Centennial Commission. This fund, in addition to the five perpetual trophies of the National Association of Engine and Boat Manufacturers, will be given—together with several other trophies donated by individuals—for the various events during the week.

This programme opens Monday morning, July 28, at Toledo, with the first of the races of the National Association Carnival. These races extend throughout the day on the Maumee River Speedway, a course which is unequaled in the world, as it is entirely protected and is free from driftwood, current or tide, making it possible at any time for the boats to make their maximum speed.

Tuesday is devoted to the Perry Centennial Hydroplane Class Championship races, and the day winds up with the Perry Centennial Final Free-for-All for Hydroplanes National Championship, for which the winner will be given $1,500 and a cup; second, $800; third, $500.

Wednesday morning the fleet will leave as a squadron for Put-In-Bay. Starting Wednesday afternoon, races for cruisers and open boats will be held and will be continued throughout the week, racing for the National Association of Engine and Boat Manufacturers' trophies and the Inter-Lake Yachting Association prizes. All of the National Association of Engine and Boat Manufacturers' races will be held under the 1913 American Power Boat Association Rules, while all of the Perry Centennial races will be held under the "Bang-and-go-back" plan. At Put-In-Bay there will also be a free-for-all for open boats, cruisers and hydroplanes.

Great plans have been made by the commission and the Power Boat Regatta Committee for the entertainment of visiting boatmen, and there will not be an idle moment during the week. Exceptional facilities are provided at Toledo for the loading and unloading of hydroplanes, and a derrick lighter has been provided for taking hydroplanes from Toledo to Put-In-Bay.

THE NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS' PRIZES

These trophies consist of five in all. They are perpetual trophies and are raced for under their respective deeds of gift.

The International World's Championship Trophy is offered to challengers in Class C, speed boats under 40 feet over all, course 30 miles, no handicap, flying one gun start. There are three heats for this trophy and winner determined by point system.

The National Championship Trophy is open to challengers in Class B, speed boats of 40 feet or more over all length, course of 21 miles handicap race, boats starting on their handicap time allowance, race of three heats and winner determined by point system.

The Inter-State Championship Trophy is open to challengers in Class A, speed boats under 33 feet over all length, course of 21 miles handicap race, boats starting on handicap time allowance and winner determined by point system.

The Motor Yacht Championship Trophy is open to challenge for boats in Class D, motor yachts of 60 feet or more over all length, course of 21 miles handicap race, starts made on handicap time allowance, winner determined by point system.

Cabin Launch Championship Trophy is open to challenge in Class E, cabin-launch type of boats 40 to 60 feet over all length, course of 21 miles handicap race, all boats started on their handicap time allowance, winner determined by point system.

EVENTS OF THE PERRY CENTENNIAL REGATTA

All races and all boats sailing therein shall be under the control and direction of the Regatta Committee and judges of the Inter-Lake Yachting Association. All matters shall be subject to their approval and control and all questions and disputes which may arise shall be decided by them.

These races will be conducted separate and distinct from the National Association of Engine and Boat Manufacturers' events and upon no restrictions whatever except for classification in lengths over all.

Prizes for Perry Centennial Events will be awarded in cash or silver or merchandise, at the option of the winner. It will be necessary, however, for the entrant in any Perry Centennial Event to declare on his entry blank whether he will accept cash or merchandise prizes.

Full programmes may be had from Eugene M. Emmons, 241 Jefferson avenue, Detroit, Mich., secretary of the Power Boat Regatta Committee; Ira Hand, 29 West Thirty-ninth street, New York City, Eastern representative of the Power Regatta Committee.

Programme for Narragansett Bay Race Week

The Narragansett Bay Yacht Racing Association has settled on the dates for its race week, and has made up a programme of events which promises some very interesting sport. The Association has invited all the yacht clubs on Long Island Sound and on Buzzard's Bay to participate in this event, and it expects to make it the biggest race week that has ever been held on the bay. The boats will rendezvous at Newport the day the New York Club fleet arrives; and as this will follow by a day the cruising runs of the Larchmont Yacht Club from Larchmont to New London, it will give all the Long Island Sound boats a chance of proceeding up Narragansett Bay and take part in the week's racing.

As most of the boats on the Sound will go on the Larchmont cruise, it is probable that many of them will take advantage of this opportunity of trying conclusions with the Narragansett Bay sailors. Following is the programme as outlined:

Wednesday, August 6, rendezvous of the Buzzard's Bay, Long Island Sound and Narragansett Bay boats at Newport, where the N. Y. Y. C. will hold illumination.

Thursday afternoon, August 7, the entire fleet will race to Pawtucket. It is expected that the race from New Rochelle can be started so that these boats will also finish about the same time. Thursday night, entertainment at R. I. Y. C.

Friday: First race of a series of five. Prizes for each race and special prize for highest percentage for series in each class. Rhode Island Y. C., Classes "P," Universal; "P," Narragansett Bay Y. R. A.; Buzzard's Bay 30's; "Q," Universal; "Q," N. B. Y. R. A.; 18-foot Class I, special; sonderklasse; Westport Harbor 15-foot class; Buzzard's Bay 15-foot class; Warwick Neck 15-foot class and N. B. Y. R. A. classes R, S, Z, and catboat D and E.

Saturday: Second race of series, R. I. Y. C.
Monday: Third race of series, Edgewood Y. C.
Tuesday: Fourth race of series, Edgewood Y. C.
Wednesday: Fifth race of series, Edgewood Y. C.

The regular N, P and Q classes of the N. B. Y. R. A. will take care of the Long Island Sound handicap class boats and the Buzzard's Bay 21-footers.

Entertainment at Edgewood Y. C. Monday and Wednesday evenings.
Thursday: Fleet will race to Fall River.
Friday and Saturday series of two races at Fall River.

By this programme any of the visitors who wish can leave for home on Wednesday night without losing any special prizes for which they may be eligible.

Copies of the Narragansett Bay Yacht Racing Association year book will be forwarded to anyone by applying to W. Lewis Frost, secretary, 48 Custom House street, Providence, R. I.

The Block Island Sail and Power Boat Races

The tenth annual Block Island race for sail boats of the New York Athletic Club will start Saturday, June 21, at 11 A. M. This has always been one of the most popular races on the Sound, the course being just 100 nautical miles in length, and this year another large fleet is looked for. The race is open to decked or cabin yachts in cruising trim over 20 and not over 35 feet on load water line. There are no restrictions as to crew or light sails, and time allowance is figured on the basis of ten minutes per overall foot, with an additional allowance of five per cent for yawls and five per cent for auxiliaries.

Course—From Whortleberry Island to the West Harbor of Block Island, disregarding buoys. Distance, 100 nautical miles.

Starting Line—Between two boats flying Club flags anchored to the east of Whortleberry Island.

Finish—Leave Committee Boat (flying Club flag and at night a red and white light) inside of West Harbor on either hand.

Cruising Time—Yachts must carry lead line, compass, charts, fog signal, two anchors and cables, one life preserver on deck, the regulation lights and their cabin fittings, tanks, etc.

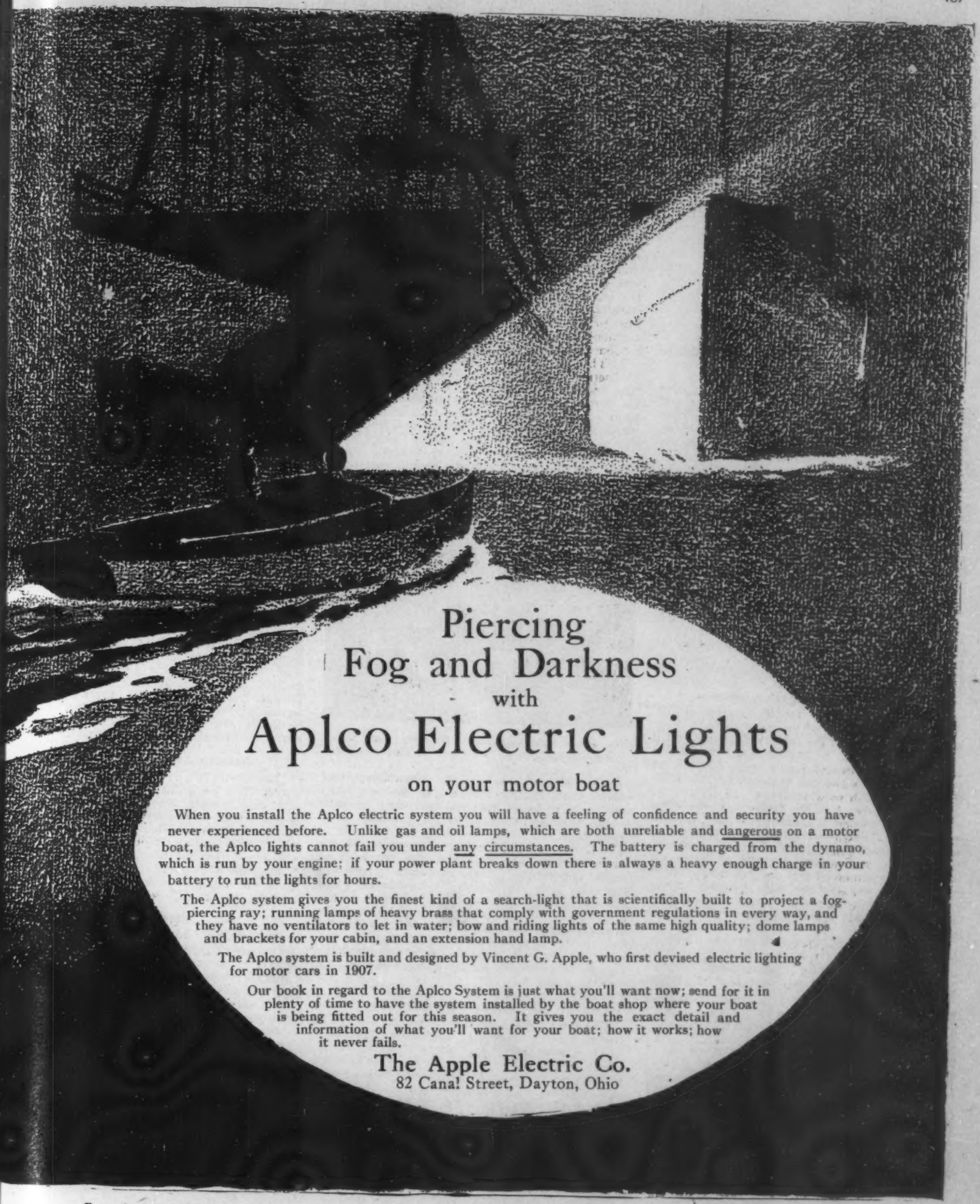
Prizes—Five prizes are offered in the open event, a prize to Handicap Class, sailing in one division, and a prize for the best elapsed time.

Entries close June 20, with Yachting Committee, H. A. Jackson, Jr., chairman; J. A. Mahlstedt, J. H. Wallace.

The power boat race for the Thomas Fleming Day Cup and the Lipton Viking Trophy will be started on the same day at 11 P. M., the course being the same as for the sail boats, the finish being at West Harbor.

Sir Thomas J. Lipton, Bart., has offered a valuable trophy in the Viking Class for boats competing in the Block Island Power Boat Race under the following conditions: To be won three times by the same owner to become his absolute property. Course and time of start the same.

Viking—A Viking is a yachtsman who navigates or assists in navigating a motor boat for the love of the sport, and who is not and for at least one year has not been directly or indirectly concerned in boat or engine designing, building, buying, selling, repairing or operating as a vocation.



Piercing Fog and Darkness with Aplco Electric Lights

on your motor boat

When you install the Aplco electric system you will have a feeling of confidence and security you have never experienced before. Unlike gas and oil lamps, which are both unreliable and dangerous on a motor boat, the Aplco lights cannot fail you under any circumstances. The battery is charged from the dynamo, which is run by your engine; if your power plant breaks down there is always a heavy enough charge in your battery to run the lights for hours.

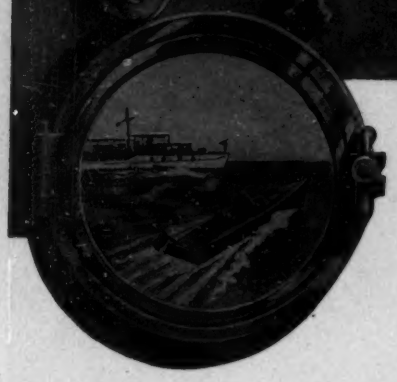
The Aplco system gives you the finest kind of a search-light that is scientifically built to project a fog-piercing ray; running lamps of heavy brass that comply with government regulations in every way, and they have no ventilators to let in water; bow and riding lights of the same high quality; dome lamps and brackets for your cabin, and an extension hand lamp.

The Aplco system is built and designed by Vincent G. Apple, who first devised electric lighting for motor cars in 1907.

Our book in regard to the Aplco System is just what you'll want now; send for it in plenty of time to have the system installed by the boat shop where your boat is being fitted out for this season. It gives you the exact detail and information of what you'll want for your boat; how it works; how it never fails.

The Apple Electric Co.
82 Canal Street, Dayton, Ohio

OF INTEREST TO THE SKIPPER



Service, an Important Factor in the Marine Engine Business

Apparently the Gray Motor Company, of Detroit, Mich., believe in giving an extensive and liberal service to customers and prospective customers alike. Their ideas of what service consists of are broad and liberal, and without a doubt the service features of their business comprise one of the biggest things in the marine engine business.

In the first place they have established completely equipped Gray Service Stations in practically every city in the United States and Canada, and in addition to this their big export business has also made necessary the establishing of service stations at various points in England, Germany, Finland, Russia, Sweden, Norway, South America, Spain, Mexico, Australia, New Zealand, China and Japan. These service stations in the big cities and motor boating centers are in charge of thoroughly experienced and competent gas engine men—men who know engines and who know boats, who are capable of giving advice of any nature whatever in regard to the outfitting and complete installation of motors in boats of different designs.

In these various service stations are carried repair parts for all Gray models, so that a customer living hundreds of miles, or perhaps thousands of miles, from the factory does not find it necessary to put up with delays and annoyance. He may get his needed repair parts direct from the service station and can be assured of the same liberal straightforward treatment as though he were sending direct to the factory; at the same time he does not find it necessary to have his boat out of commission while waiting for repairs, and this is a mighty important feature, especially when the gas engine is taking such an important part in the commercial world. Practically all of these service stations are also equipped with a complete machine shop in charge of competent mechanics, so that a complete factory service is rendered.

In addition to this extensive service, which is, of course, particularly interesting to Gray customers, the Gray Motor Company has recently entered upon an absolutely new plan of giving service not only to customers, but to prospective customers in the way of furnishing information in regard to boats of various kinds.

This new service plan was decided upon after much thought and study of the marine engine and the motor boat situation generally. Considerable data were collected from all parts of the country, the co-operation of many boat builders was enlisted, and the plans finally developed into the idea of issuing a boat builders' catalogue, showing boats of various types and sizes, from a little 14-footer up to a big roomy cruiser, with specifications and prices of the different boats completely equipped with Gray motors.

This boat builders' catalogue has already proved itself to be of great value to prospective motor boat owners, especially to the man who is buying his first boat, and has been highly commented upon by many people who are situated at places where they have no local boat builders and have not previously known just exactly where they could get the kind of boat they wanted. As a matter of fact, they knew the engine part of it better than they did the boat, and they knew what kind of an engine they wanted, but the question of the right kind of a boat was sometimes a hard one to solve, and the sole idea of this new Gray service is to be of material assistance to such people who are considering the purchase of a motor boat.

Service station of the Gray Motor Company at Norfolk, Va., in charge of Wallace Bros.

The Boston service station of the Gray Motor Company, in charge of W. J. Forbes, 243 Columbus ave.

The attitude of the public at large has shown beyond a doubt that service of this nature is of prime importance. They appreciate a concern that takes a decided interest in its customers and also in its prospective customers. It must be admitted that such plans as those that have been attempted and successfully carried out by the Gray Motor Company have done as much as any other one thing to bring the marine engine business up to its present strong standing in the commercial world.

A Wolverine on the Labrador

The three-masted auxiliary schooner George B. Cluett is being overhauled and outfitted at Philadelphia this spring for her trip to Labrador, where for the last two years she has been engaged in carrying supplies to the different medical mission stations on the coast. The schooner was built three years ago with funds furnished by George B. Cluett, of Troy, for the use of Dr. Grenfell's Labrador mission, and is fitted with a 75-horsepower Wolverine motor, which uses either gasolene or kerosene for fuel, and which drives her approximately 6 miles an hour—an excellent speed considering the size and tonnage of the vessel. For two years now the Cluett has been in almost constant service, taking supplies from the United States to St. Anthony's, Newfoundland, and also to the other hospitals on the Labrador.

The George B. Cluett, a three-masted auxiliary for Dr. Grenfell's Labrador mission, equipped with a 75-H. P. Wolverine kerosene motor.

An Evinrude in Unexplored South America

The well-known Swedish explorer, Baron Erland Nordenskiold, is about to start on an expedition through the interior of Argentina, Bolivia, Peru, Ecuador and Colombia. Baron Nordenskiold and his exploration party will traverse regions in South America where no white man has ever been, but the Baron is determined to defy all dangers and to carry out his plans for the benefit of civilization. With this in view he takes along an Evinrude Detachable Rowboat Motor, which is expected to save the Nordenskiold party from a great deal of hardship, and will be used first from Sancta Cruz de la Sierra in Bolivia along the Mamore River to Coroico, Bolivia, and later from the interior of Peru to Iquitos and through half of Ecuador. Later the Evinrude will be used in Colombia to carry the party right through to the Caribbean Sea.

Activity Among the Sailmakers

John Curtin & Co., Inc., sailmakers, of 4 South Street, New York City, report an unusually active and busy season, among the orders that they have on their books, or have turned out, being a number for yacht use. They have made suits of sails for the Indian one-design class of the Hudson River; for the G. D. class of Long Island Sound, and a complete set of awnings and canvas work for the new steam yacht Vixen, recently built by the Gas Engine & Power Company.

Steering Rope

The steering rope that stretches beyond all limits when dry, and shrinks until it would hardly fit a boat several sizes smaller when wet, is not what the wise boat owner selects after he has had one year's experience with sash cord or some other makeshift for his steering rope.

A good, strong safety chain has but one disadvantage—it is rather noisy, but gives excellent service. The ideal material is a linen braided rope with a flexible soft-laid copper core. It will neither stretch nor shrink, kink nor choke the guide blocks, and does not necessitate frequent taking up.

Charles D. Durkee & Co., 2 and 3 South Street, New York, are making a specialty of both chain and copper-core tiller rope, and before the season is over will undoubtedly have sold thousands of feet of both materials to discriminating boat owners.

Among other articles of boats' equipment

Convenient Supply Stations on water front

where Power Boats can load Gasoline direct from our tanks and secure Polarine Oils and Greases.

SO NY SOCONY PETROLEUM PRODUCTS STANDARD OIL CO. OF NEW YORK

NEW YORK CITY.

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Stapleton, Schooner "LAWRENCE,"
Great Kills, (W. Flagg)

BROOKLYN.

Foot No. 10th Street — Foot No. 12th Street
Bond & First Streets
Gravesend Beach (A. L. Anderson)
Sea Gate (Atlantic Yacht Club)
Foot 60th St., (A. Poling)

NEW YORK STATE.

Greenwood Lake, Orange Co., N. Y.

LONG ISLAND SOUND.

City Island (Robert Jacob) — Port Chester
Mamaroneck, N. Y. — New Rochelle
City Island (A. Malakoff) — City Island (A. Duryea)

LONG ISLAND.

Greenport (W. W. Griffin)
Port Eaton (Henry Steers, Inc.)
Patchogue (W. R. Marran)
Northport, Glenwood Landing
Montauk (Capt. E. B. Tuthill)
College Point (W. Needham) Cold Spring Harbor
Oyster Bay (Oyster Bay Canal & Dock Co.)
Port Washington (Manhasset Bay Yacht Club)
Port Washington (E. J. Klein)
Sag Harbor (Jno. Murphy)
Huntington Harbor (J. S. Ott)
Canarsie (Perry Horton)
Rockaway Point (P. H. Reid)
Port Jefferson (O. T. Fanning)
Babylon (W. E. Magee)
Fisher's Island (A. H. Eldredge)

HUDSON RIVER.

Tarrytown Boat Club, Tarrytown Yacht Club } Tarrytown, — Nyack
S. O. Co. of New York, Corinthian Yacht Club } Yonkers, — Newburgh
Catskill, — Hudson, — Albany
Poughkeepsie Yacht Club, Poughkeepsie

ERIE CANAL.

Rome — Utica — Syracuse
Rochester — Middleport — Lockport
Schenectady — Buffalo — Medina
Tonawanda — Albion — Brockport

LAKE ERIE.

Buffalo — Dunkirk

NIAGARA RIVER.

Buffalo (Foot Erie Street)
Grand Island (at Buffalo end of Ferry Floss's Dock)
Tonawanda, No. Tonawanda

LAKE ONTARIO.

Carlton — Summerville — Newport
Sodus Point — Point Pleasant — Charlotte
Sea Breeze — Manitou Beach — Oswego

ST. LAWRENCE RIVER.

Cape Vincent — Clayton — Ogdensburg
Alexandria Bay

LAKE GEORGE & ADIRONDACKS.

Caldwell — The Hague — Lake George
Saranac Lake — Lake Placid — Old Forge

LAKE CHAMPLAIN.

Plattsburg — Rouses Point — Burlington, Vt.
Westport — Ticonderoga — Whitehall — Port Henry

CONNECTICUT.

Greenwich — Stamford — South Norwalk
Bridgeport — New Haven — Stony Creek
New London — Cos Cob — Noank
Stonington — Rowayton — Mystic
Stratford — Groton

RHODE ISLAND.

Newport — Providence — Pawtucket
Wickford — East Greenwich — Bristol
Warren — Narragansett Pier — Block Island

MASSACHUSETTS.

New Bedford — Provincetown — Newburyport
Fall River — Hyannis — East Boston
Kingston — Dorchester — Buzzards Bay
Gloucester — So. Somerset (D. J. O'Neill)

NEW HAMPSHIRE.

Portsmouth

MAINE.

Portland — Kennebunkport — Rockland
Bath — Belfast — Eastport
Boothbay Harbor

On the St. Lawrence River our own launches make deliveries to storage tanks at summer homes along the river. Headquarters of launches at Clayton, N. Y.

STANDARD OIL COMPANY OF NEW YORK

Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

which should prove particularly interesting to the readers of YACHTING is the Durkee log, which can be used not only to tell the speed of the boat in miles, but also the engine revolutions per minute. These are two things which every man wants to know, and know accurately, in navigating his boat. The log comes at price within the means of every boat owner.

The same firm has recently taken over the old-time flag-making house of C. A. Forker & Co., and are now devoting a whole floor to this business. Mr. Forker still superintends the department. They are prepared to make yacht ensigns of all kinds, as well as club burgees and private signals.

High-Speed Launch Babette

The 54-foot high-speed launch Babette, built by the Gas Engine & Power Company and Charles L. Seabury & Co., Consolidated, from the designs of Charles L. Seabury & Co., for Mr. Henry Goldman, for use on Saranac Lake, N. Y., was given a successful tryout on the Harlem and Hudson rivers recently. She will be loaded on cars and shipped from the works of the builders at Morris Heights, New York City, about June 10, 1913.

The guarantee speed was 23 miles, but while on

Babette, the 54-foot mahogany launch built by the Gas Engine & Power Co. & Chas. L. Seabury & Co., Cons.

trial the boat showed much better speed, according to her builders.

The motor is placed under hinged covers forward of the steersman's cockpit, at which point is centered the entire control of the boat. There are seats arranged in this cockpit, at the after end, which can be used by the owner when handling the boat or by guests who wish to ride forward. Aft of this cockpit the cabin is located. This is finished in paneled mahogany, highly finished, and has heavy plate glass windows arranged to drop in pockets. It is furnished with wicker chairs and has seats at the after end on each side of the entrance.

The motive power consists of one 6-cylinder 8-inch bore by 8-inch stroke Speedway gasolene engine, with Bosch dual ignition; the master or starting coils are located on the bulkhead aft of the engine.

The Era of Motor Boats

"Marvelous has been the growth and development of the motor boat industry within the past few years," declared Treasurer Louis Mansbach, of the Times Square Auto Company, of 1743 Broadway, New York, recently. "Its phenomenal rise to one of the greatest industries of the country is only paralleled by its sister industry, the automobile. The close relationship existing between automobiles and motor boats makes the two practically allied. Fully commensurate with the progress made by the American built automobile has been the rapid strides made in the development of motor boats by American builders. Better boats have been produced each year—better in model, better in construction, better in finish. They show that our boat builders are alive and on the alert to utilize any improvement that would make the American motor boat without a peer in the world. This condition has been effected by the perfecting of the motors by a sure, steady betterment of detail, which has made them machines of wonderful reliability.

"Nowadays motors are being designed for certain specific purposes. Motors are being built for racing and high-speed boats which would be practically useless in any other type of craft. There was a time when a motor boat purchaser had little choice of a motor. America has produced the fastest boats in the world, and has at the same time put in service powerful, commodious, substantial cruising boats that have no equal. Coupled with this remarkable development is the fact that the motor boat industry is now recognized as one of the leading solid and staple manufacturing compositions. So great has been its march of progress that recently the Times Square Auto Company has been forced to extend its business in order to take in all of the standard types of magnetos, reversing gears, timers, coils, etc., even down to bow hooks; in fact, they now carry everything in stock that pertains to the thorough equipping of a motor boat, with the exception of hulls. This bespeaks the justified recognition of the markedly prosperous era of the motor boat industry, when a concern has to operate with facilities for reaching motor boat owners in all parts of the world from Broadway headquarters."

Hyde Wheels "Make Good" on the Pacific Coast

The following letter, recently received by the Hyde Windlass Company, of Bath, Me., is pretty good evidence that the Hyde turbine propeller works out in a most satisfactory manner either for speed or working purposes. The letter is a high and unsolicited testimonial to the Hyde wheel:

"LOS ANGELES, CAL., April, 24, 1913.
"HYDE WINDLASS COMPANY,
"Bath, Me.

"*Gentlemen*: We are sending you, under separate cover, a copy of our first catalogue. As you will notice we have made use of your propeller table, and as we have made mention of the fact and also mentioned the fact that we are using your wheel on our speed boat, we trust this is satisfactory.

"The boat mentioned is the Fellows II, and she is a heavy, stepless hydroplane equipped with an 80 horsepower Pope-Hartford racing engine. We have done 33 miles for four hours at a stretch, and after a few improvements are made we will challenge anything, regardless of size or power. The only point we insist on is that race must be around Catalina Island, a distance of over 80 miles and all in the open ocean.

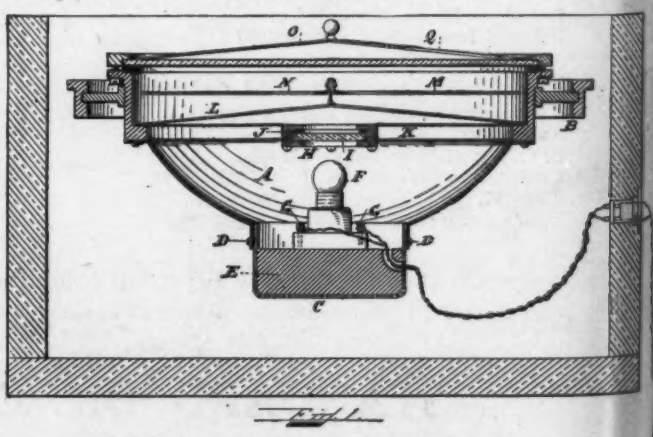
"The hull is very heavy, and frequently when the shop boat is busy we tow boats with it. We have handled boats up to 40 tons with her. The wheel is a Hyde 18 inches by 28 inches, turning 1,700 revolutions per minute; the hull is 26 by 6. The above mileage was out in the open sea and *actual* miles. Sincerely yours,

"(Signed) L. BARCLAY, *General Manager*,
"Joe Fellows Yacht & Launch Co."

An Electric Lighted Liquid Compass

One of the comparatively new articles that will make a particular appeal to boat owners, and especially to the navigators of these boats, is an electric illuminated compass which has been placed on the market by the Marine Compass Company, of Bryantville, Mass., for use on small yachts and motor boats. Instead of having the compass card lighted from the top, where the reflection of the light on the glass makes it difficult to see the lubber's line and the card, the compass is lighted from the bottom by means of a small electric light bulb, the current for which is supplied by dry batteries. There is a special attachment on the bottom of the compass bowl into which the bulb is screwed.

There is an aperture in the compass card which permits the penetration of light upward, which strikes the cover or reflector, throwing the light downward on to the face of the card, making a diffused light. The compass thus equipped not only does not require a lighted binnacle, but enables the helmsman to steer a long trick at the wheel without the accompaniment of aching eyes, which is so common in compasses lighted from the top.



An electric-lighted compass with the bulb beneath the card, through an aperture in which the light penetrates upward and is reflected down on the face of the card by the cover, giving a diffused light.

Sterling Engines in the Antipodes

As an example of how popular the Sterling engine is becoming in foreign countries, it may be noted that a great many boats in New Zealand

Ileen, a 40-footer in Auckland, N. Z., equipped with a 25-35-H. P. Sterling engine.

are being equipped with Sterling motors. A photograph of one of these, the Ileen, is reproduced here. This boat is owned and was built in Auckland, New Zealand, is 40 feet long over all, with a beam of 8 feet 6 inches, and is powered with a 25-35 horsepower Sterling engine. She is used as both a passenger and towboat in Auckland harbor, and is a fine example of a sturdy, able work boat, built on the lines of a launch.

J. C. Vanderslice, Camden, N. J., has just completed the contract for building the new Princeton coach boat. This contract called for a speed of 15 miles per hour. The boat was launched at Vanderslice's yard at Penn street, Camden, on Saturday afternoon, March 29. She is a semi-tunnel type, 30 feet by 5 feet and 18 inches draft, powered with a four-cylinder 20-35 horsepower Sterling engine. On her trial trip she developed a speed of 19¼ miles per hour. The boat was taken under her own power from Camden to Princeton, via Bordentown and Raritan Canal locks, and reached its destination Monday afternoon, March 31.

The Narragansett Bay Yacht Yard have received a commission from Mr. Rene E. Paine, Boston, to build a 37-foot launch powered with a 30-50 horsepower four-cylinder Sterling engine, construction to be started early this fall. The design of the boat is by J. Murray Watts, the Philadelphia naval architect.

THE tang of sea ozone in your nostrils—the tang of Clicquot in your throat—they go together. Non-alcoholic, but Clicquot has a bite, a clean, sparkling, gingery taste that is more gratifying than any drink you ever tasted.

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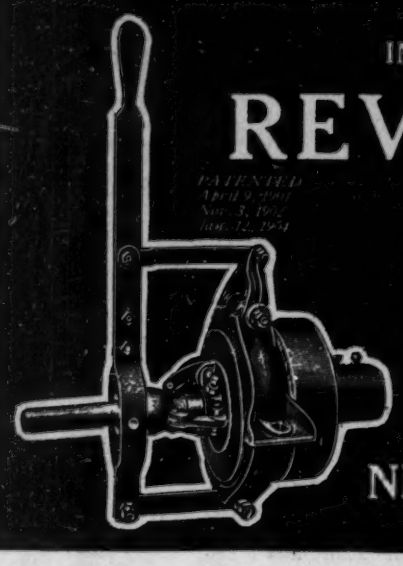

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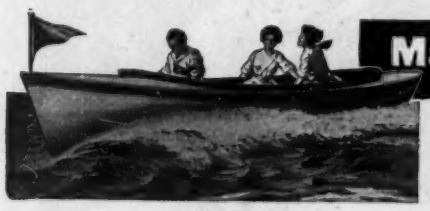

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18-20-23 and 27 ft. boats at proportionate prices. All launches tested and fitted with Detroit two-cycle reversible engines with speed controlling lever—simplest engine made—starts without cranking—has only 3 moving parts—anyone can run it. **The Safe Launch**—absolutely non-sinkable—needs no boathouse. All boats fitted with air-tight compartments—cannot sink, leak or rust. We are sole owners of the patents for the manufacture of rolled steel, lock-seamed steel boats. Orders filled the day they are received. Boats shipped to every part of the world. **Free Catalog. Steel Rowboats, $20.** (53

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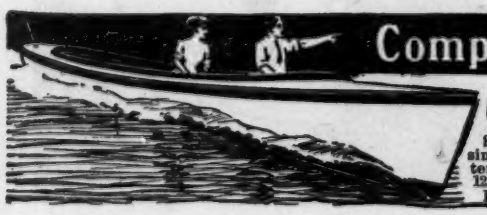
Those little advertisements appearing on page 444 are well worth reading. That "Monthly News Items" department is a new one which will be quite worth while keeping in touch with.

Get the habit.



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DETROIT BOAT CO., 1184 **Jefferson Ave., DETROIT, MICH.**

Henry Hudson's Last Voyage

(Continued from page 404.)

denly by being made a good example for all men: that make no conscience of doing evil, and that we take heed of the Savage people, how simple soever they seem to be.

The next day, the nine and twentieth of July, they made haste to be ashore, and because the ship rid too farre off, they weighed and stood as neere to the place where the Fowle bred, as they could: and because I was lame, I was to go in the Boat, to carrie such things, as I had in the Cabbin of every thing somewhat: and so with more haste than good speed (and not without swearing) away we went, Henry Greene, William Wilson, Iohn Thomas, Michael Perce, Andrew Moter and my selfe. When we came neere the shoare, the people were on the Hils, dancing and leaping: to the Cove we came, where they had drawne up their Boates: we brought our Boate to the East side of the Cove, close to the Rockes. Ashoare they went, and made fast the Boat to a great stone on the shoare, the people came, and every one had somewhat in his hand to barter: but Henry Greene swore they should have nothing, till he had Venison, for that they had so promised him by signes.

Now when we came, they made signes to their Dogges (whereof there were many like Mongrels, as bigge as Hounds) and pointed to their Mountaine, and to the Sunne, clapping their hands. Then Henry Greene, Iohn Thomas, and William Wilson, stood hard by the Boate head, Michael Perce, and Andrew Moter were got up upon the Rocke, a gathering of Sorrell: not one of them had any weapon about him, not so much as a sticke, save Henry Greene only, who had a piece of a Pike in his hand: nor saw I any thing that they had wherewith to hurt us. Henry Greene and William Wilson had looking-glasses, and Iewes Trumps, and Bels, which they were shewing the people. The Savages standing round about them, one of them came into the Boats head to me to shew me a Bottle: I made signes to him to get him ashoare, but he hade as though he had not understood me, whereupon I stood up, and pointed him ashoare. In the mean-time, another stole behind me to the sterne of the Boat, and when I saw him ashoare, that was in the head of the Boat, I sate downe againe; but suddenly I saw the leg and foote of a man by mee. Wherefore I cast up my head, and saw the Savage with his Knife in his hand, who strooke at my brest over my head: I cast up my right arme to save my brest, he wounded my arme, and strooke me into the bodie under my right Pappe. He strooke a second blow which I met with my left hand, and then he strooke me into the right thigh, and had like to have cut off my little finger of the left hand. Now, I had got hold of the string of the Knife, and had woond it about my left hand, he striving with both his hands to make an end of that he had begune, I found him but weake in the gripe (God enabling me) and getting hold of the sleeve of his left arme, so bare him from me. His left side lay bare to me, which when I saw, I put his sleeve off his left arme into my left hand, holding the string of the Knife fast in the same hand: and having got my right hand at libertie, I sought for somewhat wherewith to strike him (not remembering my Dagger at my side) but looking downe I saw it, and there with strooke him into the bodie, and the throate.

Whiles I was thus assaulted in the Boat, our men were set upon on the shoare. Iohn Thomas and William Wilson had their bowels cut, and Michael Perce and Henry Greene being mortally wounded, came tumbling into the Boat together. When Andrew Moter saw this medley, hee came running downe the Rockes, and leaped into the Sea, and so swamme to the Boat, hanging on the sterne thereof, till Michael Perce tooke him in, who manfully made good the head of the Boat against the Savages, that pressed sore upon us. Now Michael Perce had got an Hatchet, wherewith I saw him strike one of them, that he lay sprawling in the Sea. Henry Greene cried Coragio and layeth about him with his Truncheon: I cryed

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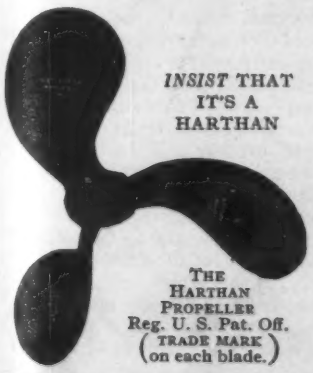

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to them to cleere the Boat and Andrew Moter cryed to bee taken in: the Savages betooke them to their Bowes and Arrowes, which they sent amongst us, wherewith Henry Greene was slaine out-right, and Michael Perce received many wounds, and so did the rest. Michael Perce cleereth the Boate, and puts it in from the shoare, and helpeth Andrew Moter in: but in turning of the Boat, I received a cruell wound in my backe with an Arrow. Michael Perce and Andrew Moter rowed the Boate away, which when the Savages saw, they ranne to their Boats, and I feared they would have launched them, to have followed us, but they did not, and our ship was in the middle of the channell and could not see us.

Now, when they had rowed a good way from the shoare, Michael Perce fainted, and could row no more: then was Andrew Moter driven to stand in the Boat head, and waft to the ship, which (at the first) saw us not, and when they did, they could not tel what to make of us, but in the end they stood for us, and so tooke us up. Henry Greene was throwne out of the Boat into the Sea, and the rest were had aboard, the Savage being yet alive, yet without sense. But they died all there that day, William Wilson swearing and cursing in the most fearefull manner: Michael Perce lived two dayes after, and then died. Thus you have heard the Tragicall end of Henry Greene and his Mates, whom they called Captaine, these foure being the only lustie men in all the ship.

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Anyone concerned with the building of a motor boat of the largest, finest type, whether as owner or naval architect, will serve his interests best by writing at once for full details of the

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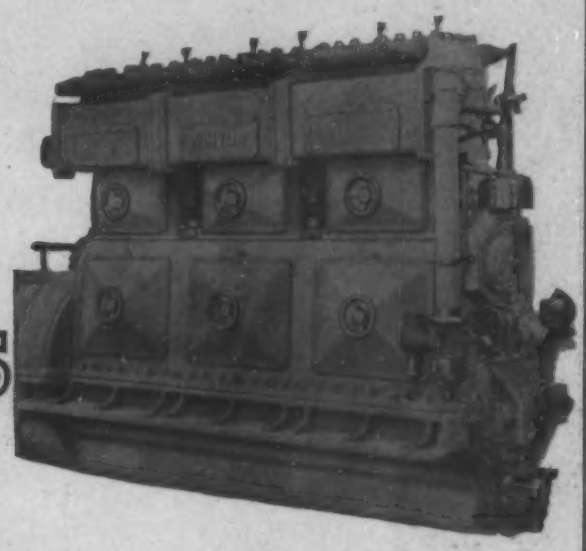

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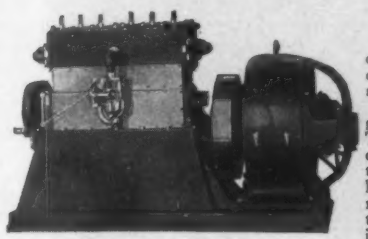
You want an engine without vibration; a powerful unit as dependable as steam; more economical per H.P. than your motor car and equally simple to care for. The Winton Six is all these; permit us to demonstrate them to your entire satisfaction in any manner which suits your convenience.



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Schedule of Long Island Sound Y. R. Ass'n.

May 30, Harlem Y. C.; Bridgeport Y. C. May 31, Knickerbocker Y. C.; New Haven Y. C.; Indian Harbor Y. C. June 7, Manhasset Bay Y. C. June 14, Larchmont, Y. C. June 21, Seawanhaka-Corinthian Y. C.; New York Athletic Club. June 25, Seawanhaka-Corinthian Y. C. June 28, New Rochelle Y. C. July 3, American Y. C. July 4, Larchmont Y. C.; Hartford Y. C.; New Haven Y. C. July 5, Riverside Y. C.; Orienta Y. C. July 12, Indian Harbor Y. C. July 19, Larchmont Y. C. July 26, Larchmont Y. C. August 2, Stamford Y. C.; Hempstead Harbor Club. August 9, Horseshoe Harbor Club. August 13, Riverside Y. C.; August 16, Huguenot Y. C.; Harlem Y. C. August 23, New Rochelle Y. C.; Northport Y. C. August 30, Seawanhaka-Corinthian Y. C.; New Haven Y. C. September 1, Larchmont Y. C.; Norwalk Y. C.; Sachem's Head Y. C. September 6, Indian Harbor Y. C. September 13, Manhasset Bay Y. C. September 20, Bayside Y. C.; Indian Harbor Y. C.

The poore number that was left, were to p
our ship to and fro, in the mouth of the streigh
for there was no place to anchor in neere hand
besides, they were to goe in the Boate to k
Fowle, to bring us home, which they did, althoug
with danger to us all. For if the wind blew
there was an high Sea, and the eddies of th
Tydes would carrie the ship so neere the Rocke
as it feared our Master, for so I will now ca
him. After they had killed some two hundre
Fowle, with great labour on the South Cape, we
stood to the East: but when wee were sixe o
seven leagues from the Capes, the wind came n
at East. Then wee stood backe to the Cape
againe, and killed an hundred Fowle more. Afte
this, the wind came to the West, so wee wer
driven to goe away, and then our Master stoo
(for the most) along by the North Shoare, t
he fell into broken ground about the Queens
Fore-land, and there anchored. From thence we
went to Gods Mercies, and from thence to the
Ilands, which lye in the mouth of our Streigh
not seeing the Land, till we were readie to run
our Bosprite against the Rockes in a fogge. Th
next day we weighed and stood to the East, b
before wee came heere, we had put ourselves
hard allowance, as halfe a foule a day with th
pottage: for yet we had some meale left and not
ing else. Then they beganne to make triall
all whatsoever: wee had flayed our Fowle, f
they wil not pull: and Robert Iuet was the fir
that made use of the skins by burning of th
Feathers: so they became a great dish of meat
and as for the garbidge it was not thrown
away.

Then Robert Iuet dyed, for meere want, and
our men were in despaire, and said wee wer
past Ireland, and our last Fowle were in th
steep-tub. So, our men cared not which end we
forward, insomuch as our Master was driven
looke to their labour, as well as his owne; f
some of them would sit and see the fore-sayl
or mayne-sayle flie up to the tops, the shee
being either flowne or broken, and would n
helpe it themselves, nor call to others for help
which much grieved the Master. Now in th
extremitie it pleased God to give us sight of La
not farre from the place our Master said
would fall withal, which was the Bay of Ga
way (Ireland), and we fell to the West of
Derses, and so stood along by the coast, to
South-west. In the end, there was a joyful e
a sayle, a sayle, towards which they stood, th
they saw more, but to the neerest we stood, a
called to him: his Barke was of Fowy, and w
at anchor a Fishing: he came to us, and brou
us into Bere Haven.

It was in September that the Discovery got back
Ireland, where it was only by pawning the ship's fitt
that the crew could obtain food and get a pilot to
them to Plymouth. Here the survivors were impriso
and a relief expedition sent to hunt for Hudson the
lowing year, which, however, was fruitless in its result

A Plain Talk on the Compass

(*Continued from page 416*)

from the shore is reversed and compared with
bearing of the shore from the ship. The diffe
ence is the deviation for the ship's head at
instant of observation. It is Easterly when
bearing from the ship is to the left of the
versed bearing from the shore, and Weste
when the bearing from the ship is to the ri
of the reversed bearing from the shore. Na
rally, the bearing of the ship from the sh
would be the correct magnetic bearing if
compass was placed in a position where it
free from any influence on the land.

Range Marks

This method consists of placing the ship's he
in line with two points, or two marks (chu
spires or beacons of some description), of wh
the magnetic bearing of one from the other
known. Then, the angle between the heading
compass and the known magnetic direction of
range is the deviation of the compass on that p
ticular course. The same range over the st
gives the deviation on the opposite course, etc.

(*To be concluded.*)

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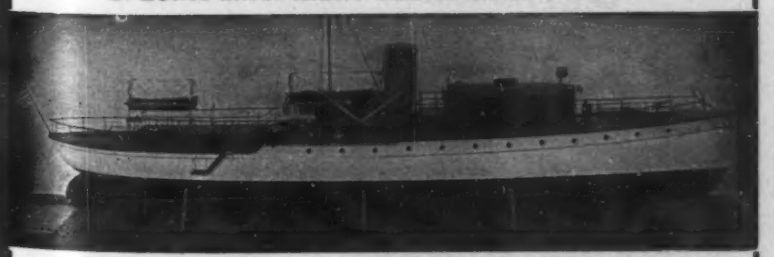

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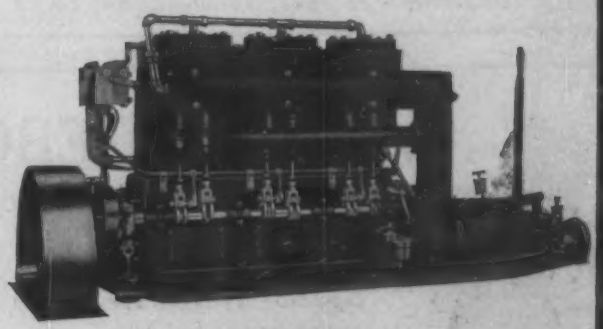

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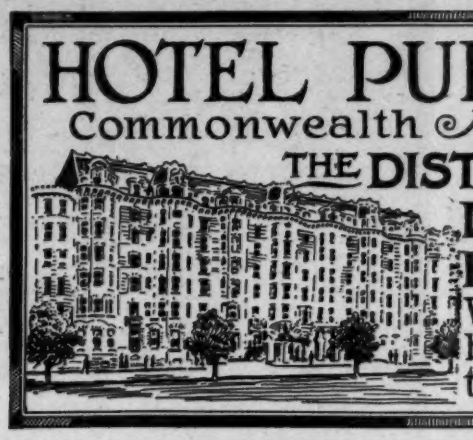

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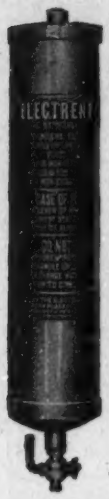

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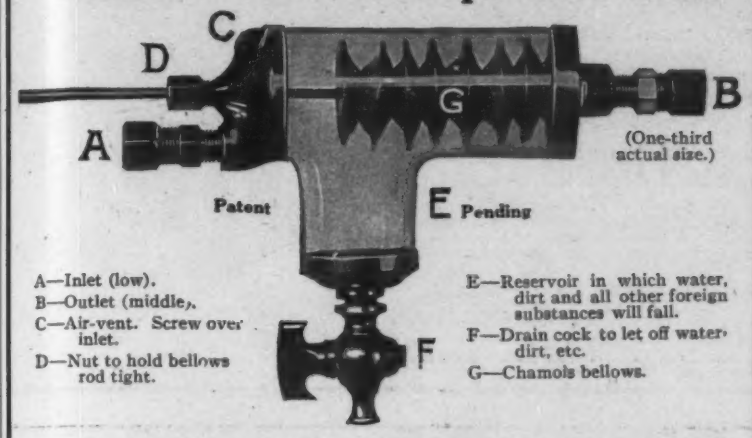

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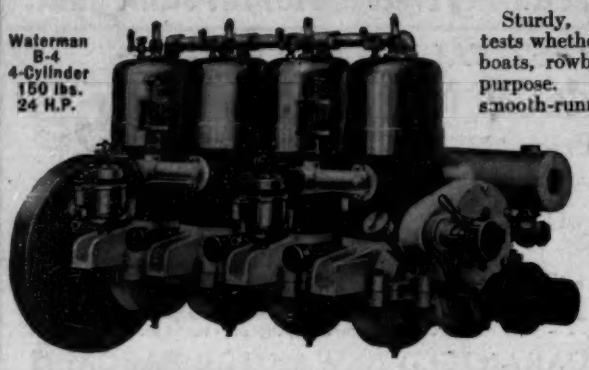

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Building a 24-Foot V-Bottom Open or Cabin Boat

(Continued from page 425.)

boat the plans are given here, the body plan appearing in the last issue. In this case you will have to continue every other rib or frame of the forward part of the boat up to the designed height of the cabin to form the sides. If you desire to build the cabin on later these pieces will have to be spliced.

The carlins of the cabin are of oak or ash 1¼ by 1½ inches, steam bent, with a 10-inch crown, and they should be spaced 10 inches center to center. The cabin roof should be of ¾-inch cypress, 4 inches wide, tongued and grooved. Assort this roof planking so that there will be no butts. They should be nailed on to the carlins very securely, countersinking the nails. Putty all nail holes and cracks before covering with canvas. Use 10-ounce canvas for this covering and fold it to give a center line, which you can lay on the roof so as to get the canvas spread evenly. This should be laid in a good marine glue, such as Jeffrey's, brushed well into the wood and ironed out with a hot iron, so that the glue will soak into the pores of the canvas, tacking it at the bow, and from the bulkhead stretch it as much as possible and tack temporarily. Then beginning at the bow, stretch on either side evenly and tack, covering the outside edge later with an inch round molding. All holes for hatch, companionway, etc., should be cut after the canvas is on. The companionway frame is cut and made as shown in the detail drawing, with a groove inside for the slide to run in. At the openings leave enough canvas to turn up on the inside and cover with a finishing strip.

The cabin arrangement in this boat shows the first 3 feet devoted to locker and water tanks, the next 6½ feet are for extension berths, and the remaining 2 feet 6 inches of the cabin are taken up by sink and ice box on one side, with locker and toilet room on the other side. The cockpit arrangement remains the same as it was in the open boat, and this requires no alteration. In piping the exhaust of the engine, the latter being covered by an engine box, I would suggest putting in a Y and running one branch under water at the stern, and on the other branch put a valve and run the pipe above water. This valve can be opened when starting.

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